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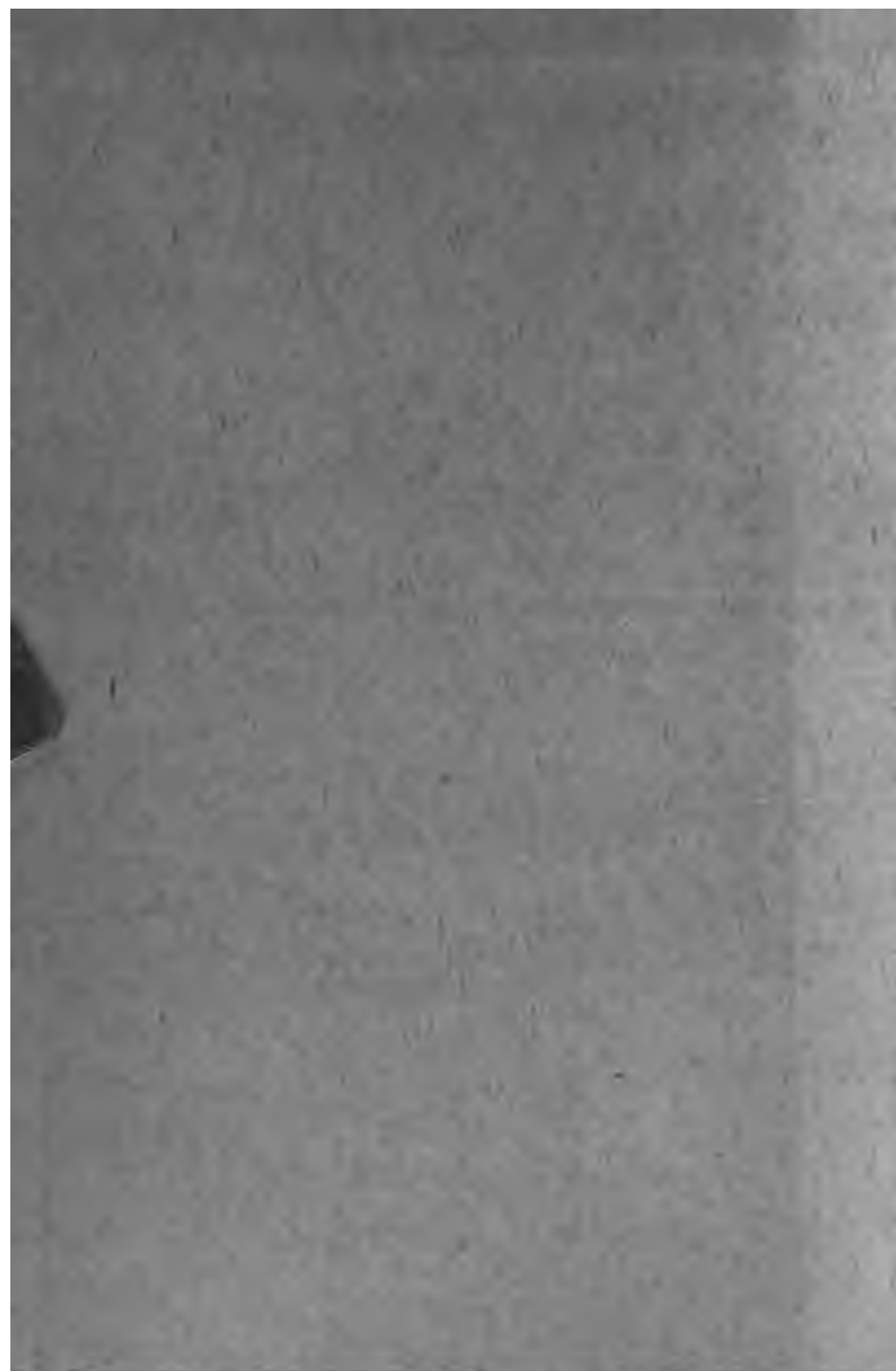
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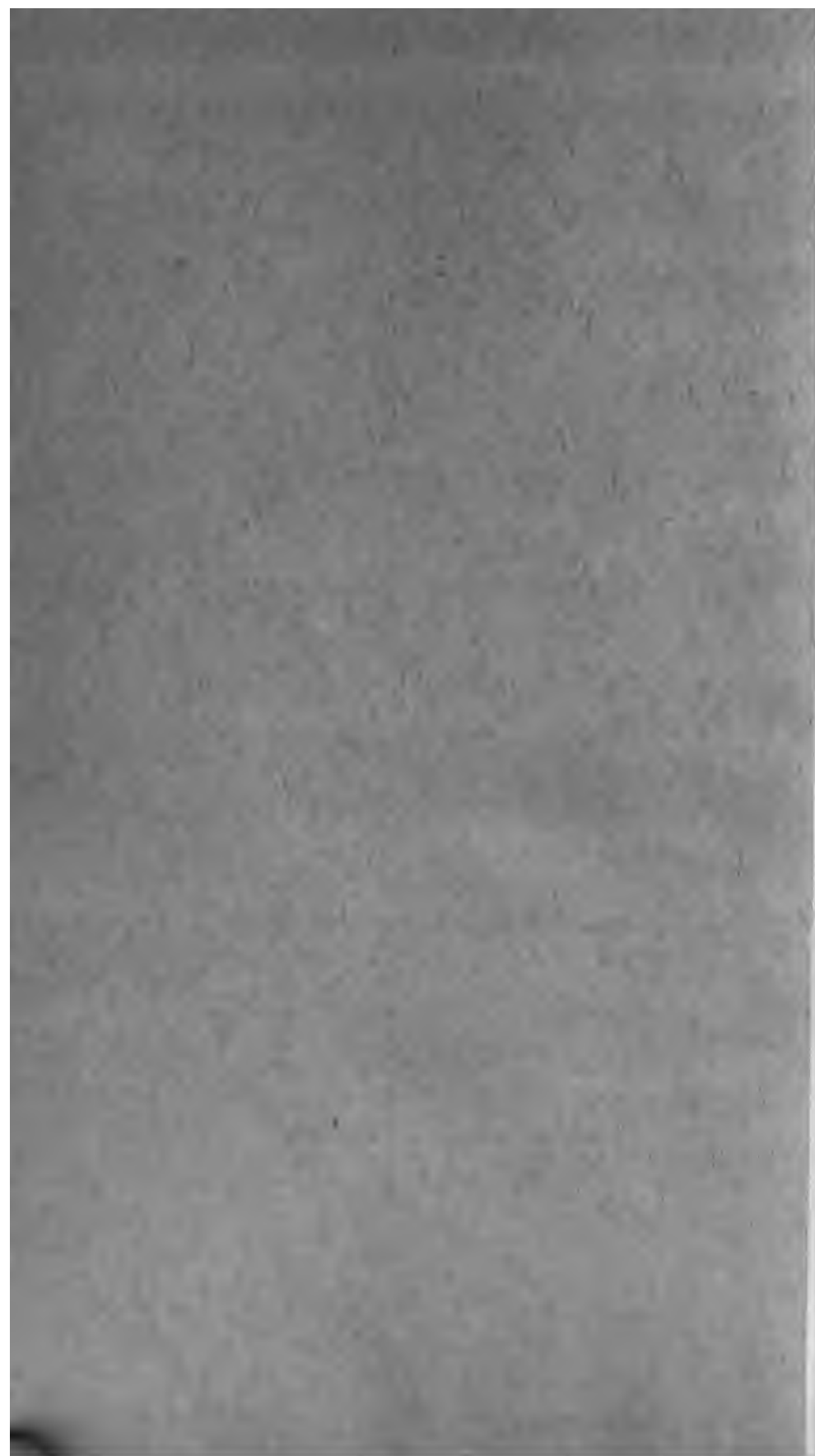


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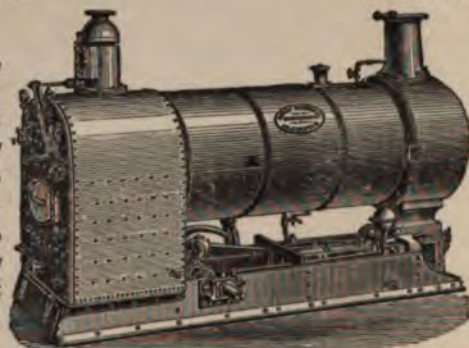
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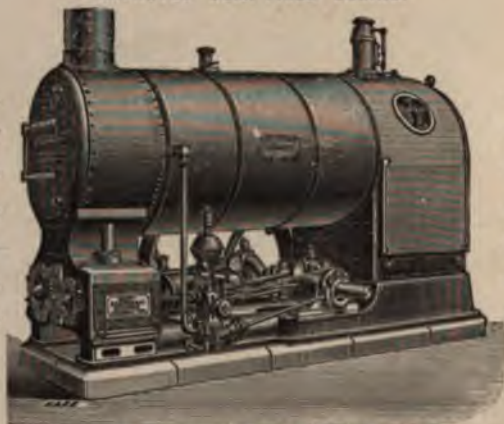
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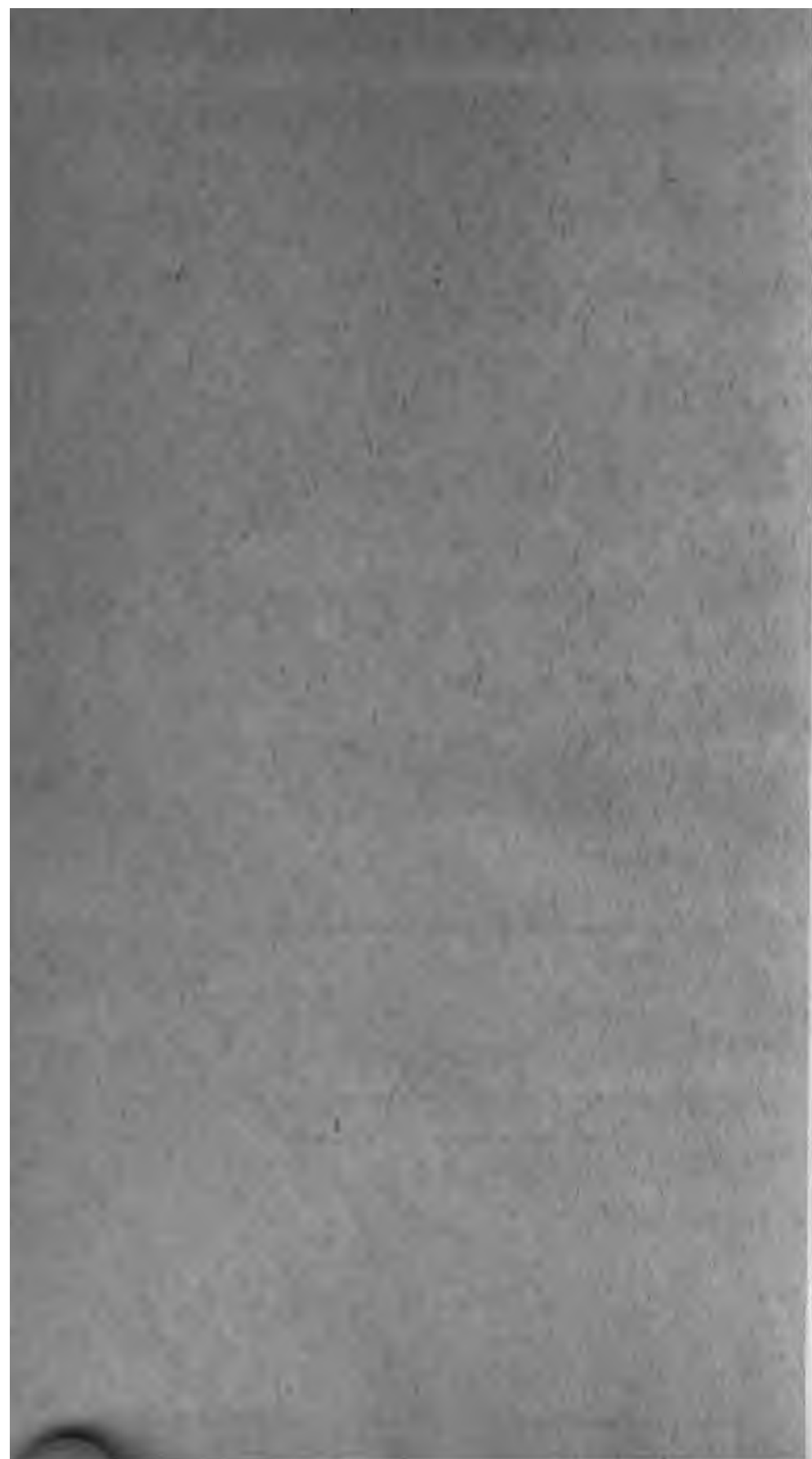
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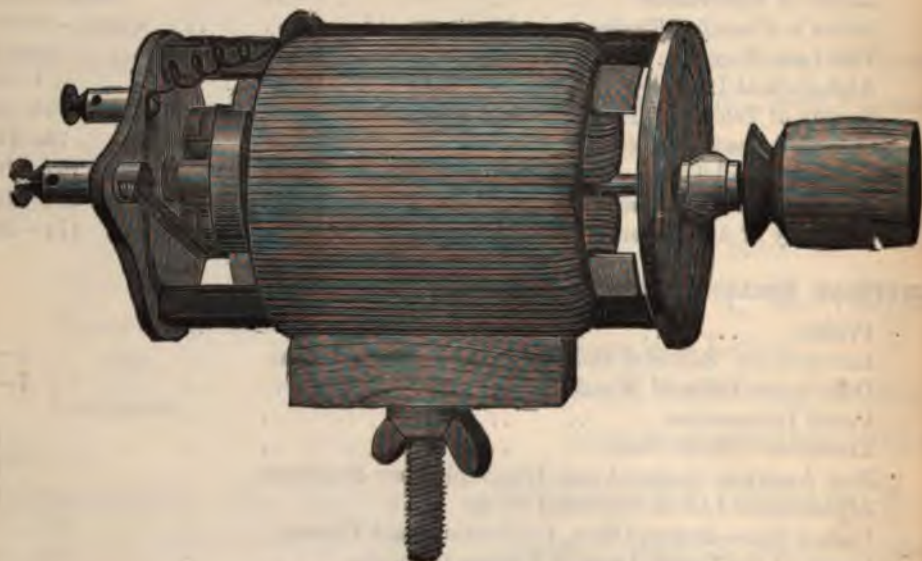
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REMARKS ON THE PAST YEAR.

DURING the year 1883 the Electrical business has been developed in a very remarkable manner, and it is our pleasant duty now to record the steady progress which has marked the advance in its multifarious branches.

The accumulators have rendered very great services, and opened quite a new era in Electric Lighting. Although not such a commercial success as had been anticipated by some, they are extensively used, and have undoubtedly a great future before them. Much remains to be done in order to make them successful, both from an industrial and commercial point of view.

Like the industry of Electric Lighting, it has been the fate of accumulators to be played out by financial philanthropists, who, after getting out of them all that could be expected in this country, are now trying their hands in younger neighbouring states.

We have heard much lately about some public experiments being carried out in Paris with the traction of omnibuses by means of accumulators; but although these were conducted with great flourishes of trumpets, the cautious public have not, we are given to understand, responded so cordially as it was desired, and have stuck to their money. The perfection of these inventions will have to be pushed some steps further, before the position of the amateur-electro-financial gentlemen will improve.

The influx of new Companies has happily been checked, and only a reasonable number of them were promoted during the course of this year. A few of them have proved still-born, and many others not much better.

The great majority of Electrical Companies of all sorts, launched during the Electric mania of 1883, are going rapidly, or have gone, to the wall. The purifying process still continues operating, and one can foresee that the balance of serious, responsible and solvent Electric Lighting Companies, will in a near future not exceed the half dozen, if it even reaches that number.

The amalgamation of the Swan and Edison Electric Lighting Companies is an event worthy of notice, and by it the public has been disappointed of the interesting lawsuit which was threatening for sometime between the two champions of incandescent lighting; but the interested parties have thought better and acted wiser than fighting; they have amalgamated.

The primary batteries have not been neglected for the accumulator or secondary battery. Like the accumulator they have their advocates, some aiming at nothing less than putting the accumulators in the shade and dethroning the dynamo machine altogether.

It is, of course, a pleasant notion to dismiss machinery and motive power altogether, from our calculations, but we are afraid this must remain an unrealised dream.

Chemists and Electricians have, since the appearance of dynamo machines, given up battery power as a cheap means of producing Electricity, and many inventors, who are neither one nor the other, would do well to bear the fact in mind.

The lighting of the beautiful establishment of the Comptoir d'Escompte of Paris to which we referred last year has been discontinued. It was conducted by means of primary batteries, and they have proved too troublesome and expensive.

It was, at the time, very noisily advertised by the advocates of primary battery power as the *ne plus ultra* of Electric Lighting installations, dispensing altogether with machinery, belting, foundations, &c., and was so far successful until the time came to reckon the cost of production and the trouble which it entails.

Some very good primary batteries have however been brought out, and it may be said that this particular branch of the Electrical science and industry has also received its share of development.

In dynamos it may be said that the quantity has exceeded the quality. Numerous patents have been taken out, and if we omit the Ball unipolar machine, and the Hopkinson improvement of the Edison machine, we may say that nothing of interest has disturbed the state of things existing in 1882.

The greatest display of Electric Lighting perhaps ever seen, took place, curious to say, at an Exhibition in which the light was only called as an auxiliary, viz., the Great International Fisheries' Exhibition, held at South Kensington, London.

All the varieties of arc and incandescent lamps and dynamo machines were put into requisition, and the lighting contributed in a great proportion to the success of the Exhibition, which was immense and well deserved. A sight which is not to be forgotten by those who have seen it, was the illumination of the great Hall, 100 feet long, holding the British Exhibits, and which was lighted by means of 1,200 incandescent lamps regularly spread over the entire surface of the walls and the roof.

The boiler and engine power, amounting to over 11,000 indicated H.P., was supplied by Messrs. Davey, Paxman & Co., and did good service.

Great attention has been, and is being, paid by the various makers of steam engines in turning out some first-class engines for the steady driving of dynamo machines. Direct driving is coming into favour in some special cases, and especially on board ship, where space is a consideration.

Numerous compact direct acting engines have been brought out, and amongst them one could be seen at the last Engineering and Metal Trades' Exhibition, held at the Agricultural Hall, which was about the size of a chimney-pot hat, and could work direct an Hopkinson-Edison dynamo of 200 Edison 16-candle lights. This machine was on the rotary principle, weighed 100 lbs., and worked at 1,000 revolutions per minute, with a pressure of steam of 75 lbs. to the square inch. It is said to be very efficient. But although these machines may answer their purpose very well in some particular instances, we doubt very much that they would prove economical for general use, both as regards to the wear and tear and the consumption of fuel. The "Otto" gas engine continues to be in great favour for driving dynamos, and renders incalculable services wherever opportunities occur to have recourse to it.

The year 1884 will see the end of the Gramme original patent for dynamo machines, and although it is said that the Company manufacturing it in this country intends applying for a prolongation of the patent, we fail to see on what ground they

can expect to be successful. According to the Patent Law, the extension of the terms of patents is intended for the benefit of inventors who have been inadequately remunerated by their patent; and the inventor, to our knowledge, has sold his rights and received his own price for his patent, and the same has been re-sold to other purchasers before it finally reached the hands of the present Company.

Should this patent lapse, as it will in the ordinary course of things, a great stimulus in the manufacture of dynamo machines will be the result.

Of Electric Lighting there is not much to be said beyond that this industry is now pursuing its natural and gradual development.

The days of sensational demonstration are over, the public being now well educated to the new illuminant.

Serious work is now undertaken and carried out quietly and successfully by a few of the responsible firms who have survived the crisis, and the lighting of the great ocean steamships is proving a very remunerative business. All first-class vessels are being systematically lighted, and the majority of the large buildings and hotels recently erected, have adopted the Electric Light. Factories, store-rooms, theatres, &c., are following in their wake. The work preparatory to the lighting of public thoroughfares and private houses from centres of distribution is in a fair way of progress, and we hope to be able to record in our next issue the successful working of one or more such systems.

The inventors keep pace with progress: numerous patents for every detail of apparatus used for lighting by arc and incandescence are being daily taken out; in fact the Electrician proves one of the best customers of the Patent Office.

The minute incandescent lamp is becoming very popular, they are to be seen shining in the head gear of the ballet girls at the Savoy Theatre in "Iolanthe," and at the Grand Opéra of Paris in "La Farandole." Some smaller ones are now even worn at the button hole, and as luminous jewels, such as hair and scarf pins, &c. It is a remarkable thing that the Electric Light can be produced of any power between the 100,000 candle light exhibited in the tropical department of the Crystal Palace Electrical Exhibition in 1882, and the small surgical incandescent lamp used for throat diseases, the size of which does not exceed that of a very small green pea. The small incandescent lamp is also proving of great value to the microscopist, such lamps being now used by them in the place of the oil lamp used heretofore.

The Electrical transmission of power continues to attract a great deal of attention. M. Marcel Deprez, in France, has continued the experiments which he began at the Paris Electrical Exhibition in 1881, and illustrated at the Munich Electrical Exhibition the following year, as described in our last issue.

His next demonstrations took place at the terminus of the Northern Railway Company, in Paris, and at Grenoble, a town in the South East of France. The experiments at the Gare du Nord are going to be repeated on a much larger scale, the immense resources of this Company having been placed at M. Deprez's disposal. The experiments will take place with the power of 200 H.P. obtained from a locomotive, and the telegraph line of the Railway Company will be made available. Baron de Rothschild, the largest proprietor of shares in the above-named Company, has taken much interest in the inventions of M. Deprez, and is said to have placed at his disposal a sum of £40,000 to be spent in purely experimental work in order to prove the merits of

the inventions. At Grenoble the power was received from a dynamo driven by a turbine situate at a waterfall in the village of Vizille, distant about nine miles. A complete circuit of two wires of silicious bronze, two millimètres in diameter, and of a total resistance of 167 ohms connected the producing and receiving machines, and some careful observations, culminating in a very interesting report, were made by a committee of learned gentlemen appointed at the instance of the Mayor of the town of Grenoble.

Some further experiments, consisting in the distribution to various machine tools, printing presses, &c., in various parts of the town, from a dynamo actuated by a steam-engine in the town of Grenoble, were indulged in, and the good people of Grenoble were so excited with the result, that they actually illuminated the town at night in honour of M. Deprez. Much more modest, but no less interesting, were the experiments carried out in our midst by a French inventor of the name of Gaulard, who, with the permission of the Metropolitan District Railway Company, has laid through their tunnel a primary circuit of 15 miles of insulated wire, four millimètres in diameter, and established a central distributing station at Edgware Road Station, and four auxiliary stations at Gower Street, King's Cross, Notting Hill Gate and Aldgate, lighting the central, as well as the four last named stations, daily for the past six weeks without a single stoppage. This system is called by the inventor secondary generators, and the process consists in establishing, wherever the light is wanted, one of these apparatus composed of 16 vertical columns, about five feet high, and made of cable coiled round a tube of cardboard. The cable itself is composed of primary wire of the same size as the wire of the primary circuit, and surrounded by 48 wires of smaller dimensions, in six series of eight wires; these are the secondary wires, and their ends are attached to terminals which can be joined in series or parallels by means of a very simple switching arrangement.

The primary current, which is produced by means of an alternating machine induces some secondary currents in the columns of the secondary generators, and these by being used either separately or in groups, are made to answer whatever purpose may be desired, according to the system of light intended to be used.

The secondary currents are, moreover, influenced by means of an arrangement similar to the one adopted in the medical coil, and which allows more or less of the bundle of soft iron wire constituting the core to be exposed to the action of the current.

The lights are thus distributed:—

Edgware Road Station—30 Swan lamps 20 candle-power and 3 Swan lamp 40 candle-power, using 12 columns and 2 Jablochkoff lights on 4 columns.

Gower Street—24 Swan lamps 20 candle-power on 8 columns.

King's Cross—22 Swan lamps 20 candle-power on 8 columns, and 2 Jablochkoff lights on 4 columns. Total, 12 columns used.

Notting Hill Gate—20 Swan lamps 20 candle-power on 8 columns, and Jablochkoff on 2 columns.

Aldgate—34 Swan lamps 20 candle-power on 12 columns, and 1 Jablochkoff on 2 columns.

The primary current employed has an electromotive force of 2,000 volts, and an intensity of 10 ampères; and it is a curious fact that, notwithstanding the excessive potential above-named, no risk of danger exists, as the primary circuit is always closed metallically. M. Gaulard illustrates the fact by taking hold with his hands of the two terminals of any of his secondary generators.

A demonstration of this system on a much larger scale is contemplated, and we hope that it will be our duty to report it in our next issue.

The Electric traction or propulsion is effected in two ways—by driving from a fixed dynamo a moveable one placed on the vehicle, and electrically connected with it by means of a metallic conductor, as is the case with many of the Electric railways in existence; and also by working a moveable dynamo fixed to a vehicle by means of secondary or primary batteries also carried with the vehicle, such as is the case in electrical omnibuses and electrical launches. Of the former we already have a certain number, and are threatened with more.

Besides the Waterloo and Charing Cross Electric Railway, for which an Act of Parliament was obtained last year, as reported in our last issue, and the construction of which has remained in abeyance, two Companies are now petitioning Parliament for the obtaining of powers for constructing two new lines of underground electric railways. One of these lines, which is to be called the Mid-London Electric Railway, is intended to connect the west end of Oxford Street to the Royal Exchange; the other, the London Central Electric Railway, will run from Regent Circus to the Post-office, *via* Charing Cross.

An Electric tramway was inaugurated by the Lord-Lieutenant of Ireland on the 20th of September last, at Portrush, on the north-east coast of Ireland. The line is nearly six miles long, and runs between the last named town and Bush Mills; and a further extension of it is contemplated.

The motive power, pending the completion of the turbines, which are in course of erection, is a 20 H.P. steam engine, but when the work is complete there will be three turbines of 40 H.P. each, or a total of 120 H.P., worked by the waterfall at Bush Mills.

The construction of another Electric tramway, also in Ireland, was undertaken in September last; this will run between Newry and Bessbrook.

An experimental Electric Railway was exhibited with great success during last summer on the beach at Brighton, and will probably lead to a work of a more permanent character.

During the last meeting at Wimbledon an Electric Railway conveyed the passengers from the Railway Station to the Common.

In Paris public experiments in driving omnibuses by Electricity have been carried out, and should the scheme prove economical it will be extensively adopted.

The construction of Electric Railways in Vienna has been decided upon.

Germany has a few Electric Railways; and the United States are energetically adopting this mode of propulsion.

Electric launches are also getting into general use.

It will be seen from the above that the transmission of Electrical power is growing very important, and this branch of business will soon take the prominent place which we have from the beginning assumed that it would.

Progress in telegraphy has also taken place during the year, the result being the increase in the working capacity of the existing lines. The Baudot system for rapid telegraphing, which was so much admired at the Paris Exhibition of 1881, is being extensively adopted throughout France; and the latest news from New York bring us the information respecting a new system by means of which 72 messages can be conveyed at a time over one wire.

France is completing her system of underground wires, and has publicly inaugurated, quite recently, the first section of this system, covering the east of France. The section of the north of France is expected to be completed some time in 1884.

The silicious bronze wire, an allusion to which was made in our last issue, is growing into favour. Two lectures delivered by Mr. Preece upon the subject, one in Vienna the other recently before the Institution of Civil Engineers in London, contributed to making it popular.

An interesting occurrence will take place in the reduction of the tariff for inland telegraphic messages from 1s. to 6d., it will come into operation as soon as the plant required for the contemplated increase of business is ready for use. The installation of the plant and erection of the additional lines required are being pushed forward with great energy.

Submarine telegraphy has not been idle during 1883; many new cables have been laid, and the repairing business has been somewhat brisk.

The laying of a few more Atlantic cables is contemplated; amongst others being those known as the Bennett-Mackay cable and the Hadley cable. The former has, so to speak, become an accomplished fact, since it is actually being manufactured by the firm of Messrs. Siemens Bros., Limited. Its particularity is that it is intended to be used exclusively for the private purposes of Mr. Bennett in relation to his paper, the *New York Herald*. The latter has not as yet come out of the state of project; we have heard much about it, but not of its becoming a fact. Its main features were to be a very low tariff and a system of co-operation amongst its customers.

A cable ship, H.M.S. "Monarch," has been built at Glasgow, at the yard of Messrs D. J. Dunlop & Co., to the order of the Postmaster-General, and it is intended for the laying and repairing of cables in British waters. Until now the Post Office had to depend upon private enterprise for the maintenance of its cables.

The Telephone business is steadily increasing. Numerous improvements have been and are being continually made into all its details, and the apparatus is daily gaining in simplicity and sensitiveness. New exchanges are being established in every important town; neighbouring towns are being connected with each other; wealthy individuals are getting their private residences connected with their places of business. The range of the apparatus is being constantly increased, and a distance of 1,000 miles is considered nothing unusual.

From statistical documents it appears that in 1882 there were not less than 303 towns in which telephone exchanges were established, and the subscribers using them numbered not less than 79,000 people. Europe has the largest number of towns, but America has the largest number of subscribers.

An important decision was given in August last by the Examiner of the American Patent Office on the much vexed question of priority in the invention of the telephone, and adjudicated it to Bell. The contest began in March, 1878.

Electric Exhibitions have been and are still the order of the day. 1883 has seen the Vienna Electrical Exhibition, which proved very interesting and a comparative success. Some more exhibitions are announced during 1884 at Rouen, Turin and Philadelphia, this last one will be purely electrical.

The Electrical Societies are sharing their part of the success of the development of the Electrical industries.

The Society of Telegraph Engineers numbers not less than 1,200 members all told.

A French Society called the "Société Internationale des Electriciens," started in August last, under the auspices of Mr. George Berger, the esteemed President of the Paris Electrical Exhibition, 1881, and under the direct patronage of the Minister of Posts and Telegraphs, M. Cochery, already numbers over 1,200 members, amongst which are about 80 English.

In Belgium a similar Society has been founded, and is negotiating with the French above-named Society with a view of becoming amalgamated with it.

Under the name of "Dynamicables" a social gathering takes place monthly in London, and the numerous subscribers meet at table to enjoy a good dinner, and a sociable evening.

A similar monthly gathering takes place amongst the Paris Electricians.

New Electrical periodicals have also made their appearance in 1883; these are the *Electrical Engineer* and the *Postal, Telegraph and Telephone Gazette*.

A new Patent Law has been promulgated in 1883, which will come into operation on the 1st of January, 1884. Its features are much simpler than those of the old law, and the cost of taking out and maintaining patents is considerably reduced, at least as regards the first years of the life of the Patent. Facilities are also afforded as regards payment, which can be effected by instalments instead of in a lump, as before. Altogether, it is to be expected that the patent business will receive a great impetus, and this will no doubt prove a boon to the country in time.

A new wire and plate gauge, promoted by the Standards Department of the Board of Trade, has been approved by an Order in Council, bearing date the 23rd of August, 1883, will become a Board of Trade standard under the Weights and Measures Act, 1878, from the 1st of March, 1884. We give this table elsewhere.

Numerous reports have been made by authorities upon various electrical apparatus and systems; interesting lectures on Electrical subjects have been delivered both before Electrical Societies and other learned and popular audiences; numerous books have been published in different languages bearing upon matters electrical, and we will not attempt to describe or even name them, as their number is growing so rapidly that they are becoming legion. We must refer our readers to the technical publications, in which he will find them described and reviewed at full length.

Schools where Electricity is taught in all its branches have also been started both in the capital and in the provinces, and they are attended by numerous and attentive students.

From the foregoing description of what has been, and is being done in Electrical matters (and we are afraid we have not been able to adequately grasp the subject in so short a review), we can afford to look forward with hope to the future. It will be a great pleasure if we are able, as every year goes by, to record the unexpected progress made by the multifarious applications of that subtle and mysterious agent, Electricity. Before closing this chapter we must pay our tribute to the departed.

1883 has been a year particularly fatal to the Electrical community.

A very short time after we had written our review last year Mr. C. V. Walker, F.R.S., who had been for many years Telegraph Engineer to the South Eastern Railway, died at an advanced age. He was an Electrician of mark, and had been President of the Society of Telegraph Engineers in 1878.

Sir James Carmichael, Bart., died the 7th June. He was the Chairman of that very successful Cable Company, the Submarine Telegraph Company; also of the Mediterranean Extension Telegraph Company; Vice-Chairman of the Electric Sun Lamp Company.

General Sir Edward Sabine, R.A., K.C.B., died the 26th June, at a very advanced age, he had been President of the Royal Society.

William Spottiswoode, F.R.S., President of the Royal Society, died the very day after, the 27th June, being comparatively a young man.

Cromwell Fleetwood Varley, F.R.S., a Vice-President of the Society of Telegraph Engineers, died early in September.

Richard Werdermann, died the 15th of the same month, being only 55 years of age. Werdermann was a clever inventor, and his name is attached to many important discoveries, he did not live to see his inventions succeed.

Alfred Niaudet, the well-known French Electrician and Author, died the 4th October, preceding in the grave by only one month his father-in-law, M. Louis Bréguet, a Member of the Institute and of the Bureau des Longitudes. If we remember that Antoine Bréguet, M. Louis Bréguet's son, died quite a young man in 1882, it will be seen that, with M. Niaudet's, three deaths have occurred in the same family within the scope of two years, and by which France and the world at large have been deprived of three electricians of mark.

Mr. J. Gibbs, an English telegraphist, established and well known in Belgium, died in Brussels on the 2nd November.

Sir William Siemens closes this lugubrious list. He died in November last, in the full vigour of intellect and health of body. His lamented death, which came quite suddenly and unexpectedly, was caused by an accident of a very simple nature. Coming out from a meeting of the Royal Society on the afternoon of the 5th November, he slipped and fell on the pavement in Piccadilly; it was thought to be of so little gravity at the time that Sir William did not even take to his room, but transacted business as usual the following day. A few days after, he was confined to his room, and when least expected, he passed away without any warning to those surrounding him.

J. A. BERLY.

London, 15th December, 1883.

TABLES & FORMULÆ.

FORMULÆ OF THE ABSOLUTE UNITS

1.—*Fundamental Units.*

L—Length or Space = 1 centimètre.

T—Time = 1 second.

M—Mass = 1 gramme.

2.—*Derived Mechanical Units.*

$$(1) \text{ Velocity—V} = \frac{L}{T}$$

$$(2) \text{ Force—F} = \frac{LM}{T^2}$$

$$(3) \text{ Work—W} = \frac{L^2 M}{T^2}$$

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3.—*Derived Magnetic Units.*

Strength of the Pole of a Magnet $m = L^{\frac{3}{2}} T^{-1} M^{\frac{1}{2}}$

Moment of a Magnet $ml = L^{\frac{5}{2}} T^{-1} M^{\frac{1}{2}}$

Intensity of a Magnetic Field $H = L^{-\frac{1}{2}} T^{-1} M^{\frac{1}{2}}$

4.—*Electro-Magnetic System of Units.*

Quantity of Electricity $Q = L^{\frac{1}{2}} \times M^{\frac{1}{2}}$

Strength of Electric Current $C = L^{\frac{1}{2}} T^{-1} M^{\frac{1}{2}}$

Electro-Motive Force $E = L^{\frac{3}{2}} T^{-2} M^{\frac{1}{2}}$

Resistance of Conductor $R = L T^{-1}$

5.—*Electrostatic System of Units.*

Quantity of Electricity $q = L^{\frac{1}{2}} T^{-1} M^{\frac{1}{2}} = v Q$

Strength of Electric Current $c = L^{\frac{1}{2}} T^{-2} M^{\frac{1}{2}} = v C$

Electro-motive Force $e = L^{\frac{1}{2}} T^{-1} M^{\frac{1}{2}} = \frac{E}{v}$

Resistance of Conductor $r = L^{-1} T = \frac{R}{v^2}$

$v = 310\cdot740\cdot000$ mètres, per second approximatively, the ratio of the Electro-static the Electro-magnetic Unit of Quantity.

UNIT OF FORCE is the force which would produce, in a body weighing one velocity of one centimètre per second. Calling gravitation the nat force, the absolute unit of force will be $\frac{1}{981}$ th part of it, or $\frac{1}{981}$ of acted upon by the earth's attraction, or the weight of $\frac{1}{981}$ gramme.

UNIT OF MECHANICAL EFFECT is the unit of force carried up through one or $\frac{1}{981}$ raised one centimètre.

UNIT OF MECHANICAL PERFORMANCE is the unit of mechanical effect or wor in the unit of time, or $\frac{1}{981}$ gramme raised one centimètre in one seco

ELECTRICAL UNITS OF MEASUREMENT.

(*British Association and Congrès International des Electriciens, Paris, 1881.*)

1.—RESISTANCE.—The Ohm is equal to 10^9 absolute electro-magnetic units, resistance of a prism of pure mercury 1 square millimètre section a mètres long, at 0° cent. It is represented by a length of about 400 French telegraphic wire (4 millimètres). The Megohm used in insulations is equal to a million Ohms, or 10^6 absolute electro-magr The Microhm is equal to one-millionth part of an Ohm, or 10 absol magnetic units.

2.—ELECTROMOTIVE FORCE.—The Volt is equal to 10^8 absolute electro-magr or about equivalent to 0.9268 times the electro-motive force of a element.

A Megavolt = 1,000,000 Volts.

A Microvolt = $\frac{1}{1,000,000}$ Volt.

3.—CURRENT.—The Unit of Current is equivalent to an Ampère per seco Current having an electro-motive force of one Volt and a resistance of

4.—QUANTITY.—The Unit of Quantity, the Coulomb, is defined by the conditi Ampère gives one Coulomb per second.

5.—CAPACITY.—The Farad is the capacity defined by the condition that a Coi Farad gives one volt.

All these units have their megas and micros (1,000,000 and $\frac{1}{1,000,000}$).

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32585	·04405	·038210
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493915	·022475	·019495
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759461	·014384	·012477
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313859	·0059443	·0051562
479873	·0046967	·0040740
898653	·0035959	·0031192
163710	·0031006	·0026895
139493	·0026419	·0022917

1 Statute Mile =
 1 Knot or Nautical Mile =
 1 Admiralty Knot =
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RESISTANCE AND WEIGHT TABLE.

(From "The Electrician.")

The resistances are calculated for pure copper wire.

The number of feet to the pound is only approximate for insulated wire.

meter.	Feet per pound.			Resistance, naked copper.			
	Cotton-covered.	Silk-covered.	Naked.	Ohms per 1,000 ft.	Ohms per mile.	Feet per ohm.	Ohms per pound.
849	20	·6259	3·3	1600·	·0125
443	25	·7892	4·1	1272·	·0197
189	32	·8441	4·4	1185·	·0270
074	40	1·254	6·4	798·	·0501
081	42	46	50	1·580	8·3	633·	·079
196	55	60	64	1·995	10·4	504·	·127
408	68	75	80	2·504	13·2	400·	·200
707	87	96	101	3·172	16·7	316·	·320
082	110	120	128	4·001	23·	230·	·512
525	140	150	161	5·04	26·	193·	·811
03	175	190	203	6·36	33·	157·	1·29
539	220	240	256	8·25	43·	121·	2·11
196	280	305	324	10·12	53·	99·	3·27
346	360	390	408	12·76	68·	76·5	5·20
535	450	490	514	16·25	85·	61·8	8·35
257	560	615	649	20·30	108·	48·9	13·3
01	715	775	818	25·60	135·	39·0	20·9
09	910	990	1030	32·2	170·	31·0	33·2
594	1165	1265	1300	40·7	214·	24·6	52·9
119	1445	1570	1640	51·3	270·	19·5	84·2
264	1810	1970	2070	64·8	343·	15·4	134·
126	2280	2480	2617	81·6	432·	12·2	213·
002	2805	3050	3287	103·	538·	9·8	338·
393	3605	3920	4144	130·	685·	7·7	539·
095	4535	4930	5227	164·	865·	6·1	856·
008	..	6200	6590	206·	1033·	4·9	1357·
13	..	7830	8330	260·	1389·	3·8	2166·
161	..	9830	10460	328·	1820·	2·9	3521·
	..	12420	13210	414·	2200·	2·4	5469·

RESISTANCE OF A WIRE 1 MÈTRE LONG, 1 MILLIMÈTRE IN DIAMETER.

								Ohms.	Approximal Comparativ Resistance.
Silver, annealed	0·01937	1
„ hard drawn	0·02103	1·09
Copper, annealed	0·02057	1·06
„ hard drawn	0·02104	1·09
Gold, annealed	0·02650	1·38
„ hard drawn	0·02697	1·39
Aluminium, annealed	0·03751	1·94
Zinc, pressed	0·07244	3·75
Platinum, annealed	0·1166	6·08
Iron, annealed	0·1251	6·80
Nickel, annealed	0·1604	8·30
Tin, pressed	0·1701	8·80
Lead, pressed	0·2527	13·60
Antimony, pressed	0·4571	23·65
Bismuth, pressed	1·689	87·20
Mercury, liquid	1·2247	62·50
Platinum-silver Alloy (2 parts Platinum, 1 part Silver, by weight)								0·3140	16·10
German Silver (commonly used for resistance coils)						0·2695	14·87
Gold Silver (2 parts Gold, 1 part Silver, by weight)						0·1399	7·22

WEIGHTS OF IRON WIRE OF DIFFERENT GAUGES.

B.W.G.				lbs. per knot.	B.W.G.				lbs. per kn
00	2066·68	9	368·4
0	1716·48	10	305·4
1	1393·92	11	241·4
2	1212·20	12	184·4
3	1048·32	13	144·4
4	872·80	14	109·4
5	748·80	15	86·4
6	622·08	16	65·4
7	529·92	17	50·4
8	449·28	18	39·4

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Descriptive r. B.W.G.	Equivalent in parts of an inch.	Differ- ence.	Descriptive Number. B.W.G.	Equivalent in parts of an inch.	Differ- ence.
7/0	0.500	36	No. 23	0.024	2
6/0	0.464	32	24	0.022	2
5/0	0.432	32	25	0.020	2
4/0	0.400	28	26	0.018	1.6
3/0	0.372	24	27	0.0164	1.6
2/0	0.348	24	28	0.0148	1.2
0	0.324	24	29	0.0136	1.2
1	0.300	24	30	0.0124	.8
2	0.276	24	31	0.0116	.8
3	0.252	20	32	0.0108	.8
4	0.232	20	33	0.0100	.8
5	0.212	20	34	0.0092	.8
6	0.192	16	35	0.0084	.8
7	0.176	16	36	0.0076	.8
8	0.160	16	37	0.0068	.8
9	0.144	16	38	0.0060	.8
10	0.128	12	39	0.0052	.4
11	0.116	12	40	0.0048	.4
12	0.104	12	41	0.0044	.4
13	0.092	12	42	0.0040	.4
14	0.080	8	43	0.0036	.4
15	0.072	8	44	0.0032	.4
16	0.064	8	45	0.0028	.4
17	0.056	8	46	0.0024	.4
18	0.048	8	47	0.0020	.4
19	0.040	4	48	0.0016	.4
20	0.036	4	49	0.0012	.2
21	0.032	4	50	0.0010	
22	0.028	4			

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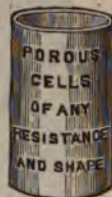
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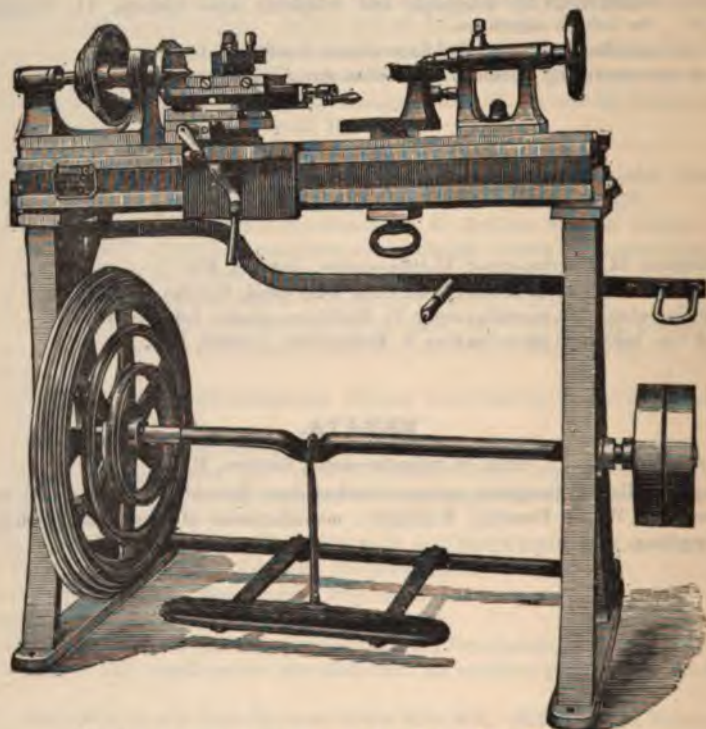
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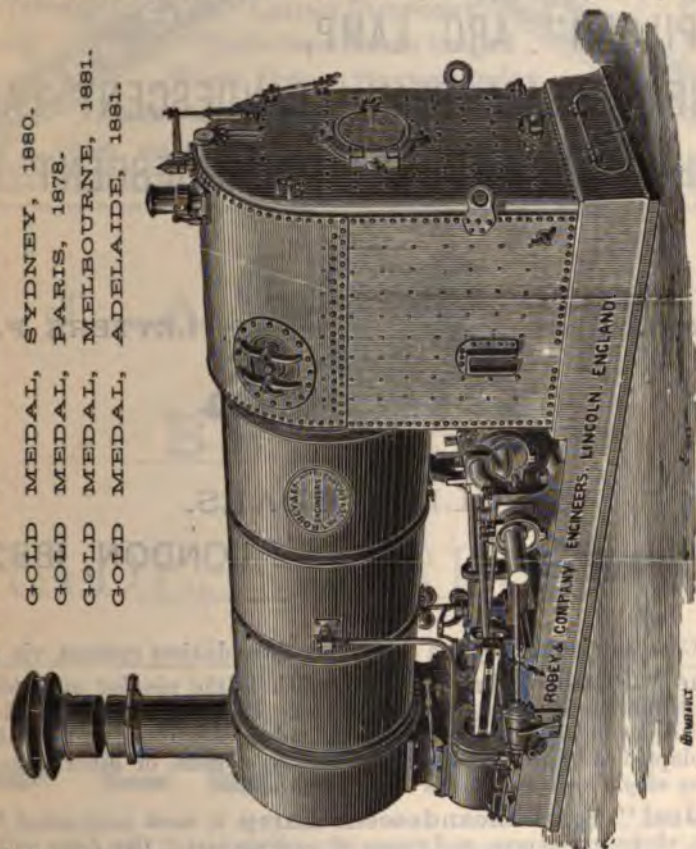
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F.—

G.—Alkali-Fabrik.

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G.—

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G.—

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G.—

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London, E.

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London, E.C.

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E.C.

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E.C.

ooks, 18, London-st., Fenchurch-st.,
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asgow.

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G.—*Waagen.*

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F.—

G.—

Birkenhead Barytes Co., 89, Cathcart-street,
Birkenhead.

Lyon, J. L. & Co., 3, Love-lane, Eastcheap,
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G.—*Batterie-Glocken.*

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Stafford. See index to advertisers.

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S.W. See index to advertisers.

Baughan, W. H. & Co., Charlbury. See index to
advertisers.

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Station, Euston-rd., London, N.W. Works,
Denby Pottery, near Derby. See index to
advertisers.

Brayne, F., & Co., Bow Pottery, Three Mills-
lane, Bromley-by-Bow, E.

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DEFRIES, J., & SONS, 147, Houndsditch,
London, E. See index to advertisers.

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London, S.E.

Doulton & Watts, Lambeth Pottery, London, S.E.

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London, W.C. (Glass cells.) See index to
advertisers.

Jobson Bros., Phoenix Works, Dudley.

Johnson & Phillips, 14, Union-court, Old Broad-
st., London, E.C.

Kirkham, W., London-road, Stoke-on-Trent.

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- Winter, F., 138, London Wall, London, E.C.
- WOOD, WILLIAM, & CO., Albert-st. Works, Burslem.

Battery Manufacturers.

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- Boland, W., 1, Caroline-st., Birmingham.
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- Didier, A., 10, Berkeley-gardens, Camden-hill, Kensington, London, W.
- Economical Electric Supply Association, Churson Works, Wood-green, London, N.
- Electric Company, Limited, Adelphi Electric Works, Adelphi-ter., London, W.C.
- Electric Portable Battery and Gas Igniting Co., 7, Queen Victoria-st., London, E.C.

Battery Manufacturers—continued.

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- Kinetic Engineering Co., 7, Wardrobe Doctors'-commons, London, E.C.
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F.—

G.—Glocken-gieasseri.

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G.—Bismuth-Händler.
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 Smith, John & Sons, 18, 23, & 24, St. John's-
 square, London, E.C.

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G.—Schwefel-Sieder.

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 London, E.

Bronze Founders and Manufact

F.—

G.—

OSBORNE & CO., 11, Gt. Garden-st.,
 chapel-rd., London, E. *See index to ad*

*** Bronzists.**

F.—Bronzeurs.

G.—Bronzisten.

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G.—Kabel-Fabriken.

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 Clegg & Shaw, 10A, Victoria-buildings, V
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 London, E.
 Felten & Guillaume (W. F. Dennis
 agents), 101, Leadenhall-street, Lond
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 5, Gt. Winchester-street, London, E.C.
 Millwall, London, E.
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 street, Manchester, London Office: 28,
 row, London, E.C. Glasgow Off
 Buchanan-street. *See index to advertis*
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 8, Drapers'-gardens, Throgmorte
 London, E.C. *See index to advertisers.*
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 Co., Limited, 106, Cannon-st., London
 Johnson & Phillips, 14, Union-court, Ol
 street, London, E.C., and Victoria
 Charlton, London, S.E. *See index to ad*
 Kinetic Engineering Co., 1, Wardrol
 Doctor's Commons, London, E.C.
 LEVY, ARMAND, 252, Goswell-rd.,
 E.C., and 42, Rue de Ruysbroeck, 1
 Cables and wires to any specificati
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 LONDON & DERBY ELECTRIC WI
 LTD., Fore-st., London, E.C. *See*
advertisers.

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Brook's, Lea Telegraph Works, Hackney-2. (Late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*
C., 12, Wharf-rd., City-rd., London, N. William, Ashbourne-road Mills, Derby. agent: Edwin Holloway, 2, Gutter-ondon, E.C. *See index to advertisers.*
F., 5, Gt. Winchester-st, London, E.C.
Brook & Co., Ltd., 12, Queen Anne's-Testminster, London, S.W. Telegraph ine Cables.
Manufacturing Co., Vulcan Works, -street, City Garden-row, London, N. *x to advertisers.*
Electric Co., 59, Moorgate-street, E.C.
Weatherley, 39, Wapping High-street, E.
se & Rawson, 11, Queen Victoria-street, ondon. Ordinary cable kept in stock. *x to advertisers.*

Carbon Manufacturers.

F.—Charbons Electriques.

G.—Holzkohlen-Brennereien.

433, Strand, London, W.C.
h, R., 11, Queen Victoria-street, E.C. *See index to advertisers.*
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Garnham & Co., Sash-court, Wilson-st., London, E.C. *See index to advertisers.*

Gent, J. T., & Co., Faraday Works, Richard's-rd., Leicester. *See index to advertisers.*

Graham, D. & G., 267, Sauchiehall-st., Glasgow; GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W., Works, Reading. *See index to advertisers.*

HENLEY'S (W. T.) TELEGRAPH WORKS CO., LIMITED, 8, Drapers'-garden, London, E.C. *See index to advertisers.*

India Rubber, Gutta Percha, & Telegraph Works Co., Limited, 100, Cannon-st., London, E.C.

Iron Wire, Wire Rope, & Fencing Co., 2, 1st corner, Westminster, London, S.W.

Jobson Bros., Phoenix Works, Dudley.

Johnson & Phillips, 14, Union-ct., Old Broad-st., London, E.C., and Victoria Works, Chiswick. *See index to advertisers.*

JOHNSON, R. & NEPHEW, 8, Gt. Windmill-street, London, E.C.

Lewis, J. Slater, 28, Hamilton-st., Birkenhead, Helsby.

Radcliffe, A. H. W., 5, Carr's-lane, Hill Street, Birmingham.

Ramsden, Camm & Co., Brighthouse, York; London office, 72, King William-st., London, E.C.

REID BROS., 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*

ctors—Telegraph—continued.

G. F., 5, Great Winchester-st., London,

D. & Co., 2, Post's-corner, Westminster,
n, S.W.

ULIUS, 108, Gt. Russell-st., Blooms-
and Bedford Telegraph Works, Store-
edford-sq., London, W.C.

Bros. & Co., 12, Queen Anne's-gate,
n, S.W.

James E. & Samuel, 3, Queen-street-
and Cannon-street, London, E.C.

Jno., Neal-st., Spon-la., W. Bromwich.
on, Reynolds, & Co., Castle Works,
arhampton.

Co., Ashwin-st., Dalston-junction, E.
Patents Proprietary Co., Limited, Mild-
ark Works, Balls Pond, London, N.

Sidney F., & Oliver, 195, Severn-road,
f, and at Nottingham.

& Irish, 30, Borough-road, Sunderland.

Contractors, Telephone.

F.—*Telephones (Entrepreneurs de).*

G.—*Telephonen—Contractoren.*

Shaw, 10A, Victoria-buildings, Victoria-
anchester. *See index to advertisers.*

ated Telephone Construction & Main-
e Co., Limited, 109, Farringdon-road,
n, E.C.

., & Son, All Saints' Works, Derby.
, George, 8, Victoria-st., Shaw Heath,
ort.

T. & Co., Faraday Works, King
rd's-road, Leicester. *See index to ad-
rs.*

Y'S (W. & T.) TELEGRAPH WORKS
LIMITED, Offices, 8, Drapers'-gardens,
n, E.C. *See index to advertisers.*

ohn, Nelson-st., Swansea.

C., 140, Douglas-st., Glasgow.

Telephone Co., 3, Bottle-lane, Not'ham.
ge's Telephone Co., Ltd., 20, Bucklers-
London, E.C.

J. Berger & Co., 31, Lombard-st., Lon-
i.C. *See index to advertisers.*

R, SONS, & Co., New Station-road,
ld.

ie Company of Ireland, Limited, Com-
l-buildings, Dublin.

Sydney F., & Oliver, 195, Severn-road,
f, and at Nottingham.

ON & IRISH, 30, Borough-rd., Sunder-

usc & Rawson, 11, Queen Victoria-street,
n, E.C.

er Companies and Merchants.

F.—*Cuivre (Compagnies de).*

G.—*Kupfergieesserei und Händler.*

ILL, JOHN & SONS, 28, Pickford-st.,
gham.

Copper Companies & Merchants—continued.

BLEWS, WILLIAM & SONS, 9 to 15, New
Bartholomew-st., Birmingham; Dom Molt-
shanoff Negliuny, Moscow; and 38, West
Smithfield, London, E.C., contractors to the
cities of Moscow, Mexico, San Paulo, &c. Gas
Companies. (Established 1782.)

Clegg & Shaw, 10A, Victoria-buildings, Victoria-
st., Manchester.

Grenfell, Pascoe & Sons, 14, Novia Scotia,
Liverpool, and Middle & Upper Bank Copper
Works, Swansea.

Smith, J. & Son, 18, 23 & 24, St. John's-square,
London, E.C.

Stanton Bros., 73, Shoo-lane, London, E.C.
Refined copper plates for electrotypers.

Vivian, H. H. & Co., 46, George-st., Parade,
Birmingham.

*** Copper Smelters and Refiners.**

F.—*Cuivre (Raffineurs de).*

G.—*Kupfer-giesereien.*

Bolton, T. & Sons, Mersey Copper Works,
Widnes, Cheadle, and Birmingham.

Leos & Saunders, 5, Warstone-lane, Birmingham.

M'Crindell, Schaw & Co., 180, West George-st.,
Glasgow.

Williams, William, Thistle-st., Hebburn New
Town, Newcastle-on-Tyne.

**Copper Tape Manufacturers, for Elec-
trical Purposes.**

F.—

G.—

Clifford, C. & Son, Fazeley-st., Birmingham.

CUTTING, R. C. & Co., Wardrobe-chambers,
Queen Victoria-st., London, E.C.

Glover, W. T. & Co. Chief office: 25, Booth-
st., Manchester. London office: 28, Budge-
row, E.C. Glasgow office: 85, Buchanan-
st. *See index to advertisers.*

*** Copperas Manufacturers.**

F.—*Couperose (Fab. de.).*

G.—*Eisenvitriol.*

Lawson, Jas. Coldwell, 38, Quayside, Newcastle.

*** Coppersmiths & Braziers.**

F.—*Fondeurs en Cuivre et Bronze.*

G.—*Kupferschmiede und Gürtler.*

Benham & Foud, Chandos Metal Works, 40, 41,
and 42, Chandos-st., Strand, W.C.

BLEWS, WILLIAM & SONS, 9 to 15, New
Bartholomew-st., Birmingham; Dom Molt-
shanoff Negliuny, Moscow; and 38, West
Smithfield, London, E.C. Contractors to the
Cities of Moscow, Mexico, San Paulo, &c. Gas
Companies. (Established 1782.)

OWEN, SAM'L., & Co., 22, Whitefriars-street,
London, E.C.

VULCAN MANUFACTURING CO., Vulcan
Works, Roccliffe-street, City Garden-row,
London, N. *See index to advertisers.*

Battery Jar Manufacturers—continued.

- LEVY, ARMAND, Electrical Sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ruysbroeck, Brussels. Leclanché, Daniel, Oatland, Maiche, Mary-Davy sulphate of lead, Bunsen's bi-chromate, carbon plates, terminals, rings, etc., etc. Sole proprietor for the United Kingdom of the celebrated Trouvé Battery, by means of which the problem of domestic lighting is now solved. Ask for special pamphlet. *See index to advertisers.*
- MALING, C. T., Ford Pottery, Newcastle-on-Tyne. London Sample Rooms, 20, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*
- PRICE, SONS & CO., The Old Stoneware Potteries, Bristol. *See index to advertisers.*
- STIFF, JAMES & SONS, London Pottery, Lambeth, S.E. (Established 1751.) *See index to advertisers.*
- TAYLOR, TUNNICLIFF & CO., 9, Bartlett's-buildings, Holborn, London, E.C. *See index to advertisers.*
- Winter, F., 138, London Wall, London, E.C.
- WOOD, WILLIAM, & CO., Albert-st. Works, Burslem.

Battery Manufacturers.

F.—Piles Electriques (Fab. de).

G.—Electrische Batterien.

- André, G. G., Dorking, Surrey.
- Appes, A., 433, Strand, London, W.C.
- Baughan, W. H. & Co., Charlbury, Oxon. (To the Trade only.)
- Becker, F. E. & Co., 34, Maiden-lane, Covent-garden, London, W.C.
- Berry, F. H., 18, Percival-street, Clerkenwell, London, E.C.
- Blakey, Emmott & Co., Northern Telegraph Works, Halifax, and 55 & 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
- Boland, W., 1, Caroline-st., Birmingham.
- CADIOT, E. H., 6, Lime-street, London, E.C. (Callaud's Battery.) *See index to advertisers.*
- Carlyle, W. A., 91 and 92, Constitution-hill, Birmingham.
- Clark, J., 43, Renfield-st., Glasgow.
- Coxeter, J. & Son. Only Prize Medal awarded specially for Medical Electricity, Paris, 1881, and Crystal Palace, Sydenham, 1882. 23 & 24, Grafton-street East, Tottenham Court-road, London, W.C.
- Dale, H. & E. J., 4, Little Britain, London, E.C., & 26, Ludgate-hill, London, E.C.
- DARLOW & CO., 143, Strand, London, W.C.
- Didier, A., 10, Berkeley-gardens, Camden-hill, Kensington, London, W.
- Economical Electric Supply Association, Churson Works, Wood-green, London, N.
- Electric Company, Limited, Adelphi Electric Works, Adelphi-ter., London, W.C.
- Electric Portable Battery and Gas Igniting Co., 7, Queen Victoria-st., London, E.C.

Battery Manufacturers—continued.

- Electro-Dynamic Co. of Philadelphia (Heap, general agent), Scott's-yard, Bus London, E.C. *See index to advertisers.*
- Fearn, Francis H. & Co., Trafalgar Wor Kent-road, London, S.E.
- Francis & Co. (F. R. Francis, C.E., ma Eagle Telegraph Works, Hatton-, London, E.C., & Lawford-rd., London.
- Garnham & Co., Sash-court, Wilson-st., E.C. *See index to advertisers.*
- GARRETT, BENJAMIN COYSON, 16 bury-square, London, E.C.
- General Electric Apparatus Co., 29, manbury, London, E.C. Makers of the Portable Silver Battery.
- Gent, J. T., & Co., Faraday Works, Richard's-road, Leicester.
- Gray Brothers, 23, West-street, Gathes Tyne.
- Kinetic Engineering Co., 7, Wardrobe Doctors'-commons, London, E.C.
- Koerber, J. A., 44, Frith-street, Soho-London, W.
- LEVY, ARMAND, 252, Goswell-rd., I E.C., and 42, Rue de Ruysbroeck, B Electrical sundriesman. Medical ba Sole agent for Trouve's photophore elec of which the medical press of all co have spoken so advantageously. *See advertisers.*
- Maggregor & Higgs, 20, George-st., Edin
- Morris Brothers, Hartington-building, Br street, Birmingham.
- Morris, Timothy, 3 & 4, Market-street, Medical Battery Manufacturers, Galva & Electricians.
- Parkes, F., 132, Burton-road, Derby.
- Rapieff, John, Hurst Lodge, Hudley Barnet, Herts.
- Richardson, T. R., 1, South-ter., Lond Derby.
- Schoth, G. A., 232, Euston-road, London
- Spence, J. Berger & Co., 31, Lombard London, E.C.
- Thompson, R., 5, Devonshire-square, F gate-street Without, London, E.
- Toynbee, E., 18, Malvern-villa, Willesden
- Tyer, G. & Co., Ashwin-st., Dalston Ju London, E.
- Vulcan Manufacturing Co., Vulcan Worl cliffe-street, City-garden-row, London
- Whalley, A., 71, Fleming-square, Black
- WHITING, HENRY G., A.P.S. & M.S Poultry-chambers, London, E.C.

Bell Founders—Electric.

F.—

G.—Glocken-gieasseri.

- BLEWS, WILLIAM, & SONS (Est 1782), 9 to 15, New Bartholomew-st mingham; Dom Moltshanoff, Neglian cow, and 38, West Smithfield, London Contractors to the Cities of Moscow, San Paulo, &c. Gas Companies.

Bell Hanging Engineers.

*F.—Poseurs de Sonnettes.
—Ingenieure für Electriche-Glocken.*

WILLIAM & SONS (Established 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, and, &c. Gas Companies.

Chromate of Potash Makers.

al Electric Supply Association, Churson, Wood Green, London, N.

Bismuth Merchants.

*F.—Bismuth (Marchands de).
G.—Bismuth-Händler.*

Matthey & Co., 74 to 80, Hatton-gar-ondon, E.C.

Blacklead Manufacturers.

*F.—Graphite (Fab. de).
G.—Krisblei.*
use, Jas. C., Soho Works, Wakefield.

& Nut Manufacturers for Electrical & Telegraphic Purposes.

*F.—Boulons et écrous.
—Bolzen- und Schrauben-Fabriken.*
ELL, WILLIAM, Hockley Bolt and Works, Brookfield-street, Birmingham. tor Arm, Shackle, and all kinds of Bolts, Screws, &c.
, WILLIAM & SONS (Established 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, and, &c. Gas Companies.
ARMAND, 252, Goswell-rd., London, and 42, Rue de Ruysbroeck, Brussels. uses of screws, terminals and couplings. gent for Barrière & Co., Paris. Screw g machines, brass and iron draw rods, &c.
. Slater, 28, Hamilton-st., Birkenhead; , Helsby.

Brass & Copper Founders.

*F.—Fondeurs de Bronze et Cuivre.
—Messing- und Kupfer-Giessereien.*
RONG, STEVENS & CO., 15, Whittall-Birmingham.
Charles H., 59, Skinner-la., Birmingham, acturer of general and cabinet brass ry.
W. H. & Co., Albion Works, Essex-st., d, Manchester.

*** Brass & Copper Founders—continued.**

BARRETT, R. & SON, Beech-st., Barbican, London, E.C.
Baughan, W. H., & Co., Charlbury, Oxon.
Economical Electric Supply Association, Churson Works, Wood-green, London, N.
BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractor to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.
Clark, A. & Co., Buchanan-street, Glasgow.
Dale, R. F. & Co., Bear-lane, Southwark, London, S.E.
Evered, Richard & Co., Limited, Surrey Works, Smethwick, Birmingham.
Forrest & Son, 23, New-street-square, London, E.C.
Glyden, Geo., 40 & 41, Oozels-st., Birmingham.
Hart, Son, Peard & Co., 53, Wych-st., Strand, London, W.C.
Osborne & Co., 11, Great Garden-st., White-chapel-road, London, E. See index to advertisers.
PHOSPHOR BRONZE CO., LIMITED, 87, Sumner-street, Southwark, London, S.E., wire and sheet mills, Bagot-street, Birmingham. Sole makers, under patents, of phosphor bronze and silicium bronze.
Smith & Chamberlain, 3 to 6 New Bartholomew-st., and 120, New Canal-street, Birmingham.
Smith, John & Sons, 18, 23, & 24, St John's-square, London, E.C.
Spencer, James E. & Samuel, 3, Queen-street-placo, London, E.C.
THURKLE & Co., 5, Denmark-street, Soho, London, W.
Watson, Arch & Co., 36, George-st., Glasgow.
Winfield, R. W. & Co., 47, Holborn-viaduct, London, E.C.

Brass Finishers.

*F.
G.*

Bainbridge, Wm., Middlegate-st., Hartlepool.
Baughan, W. H. & Co., Charlbury, Oxon.
Benham & Froud, Chandos Metal Works, 40, 41 and 42, Chandos-st., Strand, W.C.
BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782).
BURLEY, WILLIAM, Tower-chambers, London Wall, London, E.C.
Bush, J., Curzon-street, Derby.
Moss, W., 7, Warner-gate, Northumberland-street, Nottingham.
Murly, Geo., 55, Church-gate, Leicester.
Nickhols, John, 103, New North-rd., London, N.
Smith, J., Traffic-street, Derby.

Brass Finishers—continued.

Snell & Glendening, St. Paul's-buildings, 21, Paternoster-row, London, E.C.
Thew, Thos., 112, High-st.-east, Sunderland.
Webster, J., Traffic-street, Dorby.

Brass Manufacturers.

F.—Bronze (Usines de).

G.—Messing-Former.

BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)
Faraday & Son, 3, Berners-st., Oxford-st., London, W.
LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Importer of French brass rods, plain and drawn, to any pattern.

Brass Masters and Merchants.

F.—Bronze (Usines de).

G.—Messing-Former.

BARWELL, JOHN & SONS, 28, Pickford-street, Birmingham.
BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)
BOLTON, T. & SONS, Broad-street, Birmingham, and Oakmoor, Cheadle, Staffordshire.
Bossomaier & Co., 72, Finsbury-pavement, London, E.C.
Clifford, C. & Son, Rolling Mills, Fazeley-street, Birmingham.
Elliott's Metal Company, Limited, Selly Oak Works, Birmingham.
Hall Street Metal Rolling Co. (J. Bisseker, manager), Hall-street Works, Birmingham.
Heaton & Dugard, 77 to 80, Lower Loveday-street, Birmingham.
ORMISTON & CO., 25, Old-st., London, E.C.
Owen Arthur, 121, Shadwell High-st., London, E.
Smith Brothers & Co., Hyson Green Works, Hyson-green, Nottingham.
Smith, John & Sons, 18, 23, & 24, St. John's-square, London, E.C.

*** Brimstone Refiners.**

F.—Fleur de Soufre.

G.—Schwefel-Sieder.

Scott, W. T. & Co., Marsh-gate-lane, Stratford, London, E.

Bronze Founders and Manufact

F.—

G.—

OSBORNE & CO., 11, Gt. Garden-st., chapel-rd., London, E. *See index to ad*

*** Bronzists.**

F.—Bronzeurs.

G.—Bronzisten.

BLEWS, WILLIAM & SONS, 9, to Bartholomew-st., Birmingham; Dom hanoff, Negliuny, Moscow, and 38 Smithfield, London, E.C. Contractors Cities of Moscow, Mexico, San Paulo, Companies.
BLUMBERG & CO., 2, Cannon-street, 1 E.C.
PERRY & CO., 72, New Bond-st., Lond
Sutcliffe, Isherwood, 27, Great Hamptor Birmingham.

Cable Manufacturers.

F.—Cables Télégraphiques.

G.—Kabel-Fabriken.

Apps, A., 433, Strand, London, W.C.
Bullivant & Co., 72, Mark-lane, London,
CLARK L., MUIRHEAD & CO., 23, Ra street, London, S.W.
Clegg & Shaw, 10A, Victoria-buildings, V st., Manchester. *See index to advertis*
Dixon, Corbitt & Spencer, 26, Commer London, E.
Felten & Guilleaume (W. F. Dennis agents), 101, Leadenhall-street, London *See index to advertisers.*
FOX, EDWIN & CO., LIMITED. 5, Gt. Winchester-street, London, E.C. Millwall, London, E.
Francis & Co. (F. R. Francis, C.E., ms Eagle Telegraph Works, Hatton London, E.C., & Lawford-road, London
Glover, W. T. & Co. Chief Office: 25, street, Manchester, London Office: 28, row, London, E.C. Glasgow Office Buchanan-street. *See index to advert*
HENLEY'S, W. T., Telegraph Works Co 8, Drapers'-gardens, Throgmorton London, E.C. *See index to advertisers.*
India Rubber, Gutta Percha & Telegraph Co., Limited, 106, Cannon-st., London,
Johnson & Phillips, 14, Union-court, Old street, London, E.C., and Victoria Charlton, London, S.E. *See index to ad*
Kinetic Engineering Co., 1, Wardrobe Doctor's Commons, London, E.C.
LEVY, ARMAND, 252, Goswell-rd., 1 E.C., and 42, Rue de Ruysbroeck, B
Cables and wires to any specification *index to advertisers.*
LONDON & DERBY ELECTRIC WIR LTD., Fore-st., London, E.C. *See i advertisers.*

Manufacturers—continued.

ELECTRIC WIRE CO., Anchor Playhouse-yard, E.C. Late of Wendlings, Ironmonger-row, Old-street, E.C. *See index to advertisers.*

ros., Lea Telegraph Works, Hackney. (Late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

, 12, Wharf-rd., City-rd., London, N. William, Ashbourne-road Mills, Derby. agent: Edwin Holloway, 2, Gutterndon, E.C. *See index to advertisers.*

F., 5, Gt. Winchester-st., London, E.C. ros. & Co., Ltd., 12, Queen Anne's-estminster, London, S.W. Telegraph ne Cables.

Manufacturing Co., Vulcan Works, street, City Garden-row, London, N. to advertisers.

Electric Co., 59, Moorgate-street, E.C.

Weatherley, 39, Wapping High-street, E.

e & Rawson, 11, Queen Victoria-street, London. Ordinary cable kept in stock. to advertisers.

Carbon Manufacturers.

F.—Charbons Electriques.

G.—Holzkohlen-Brennereien.

433, Strand, London, W.C.

, R., 11, Queen Victoria-street, E.C. *See index to advertisers.*

Carbon Co. Works: Webber-street, , London, S.E.

Carbon Company, Barnsley, Yorkshire.

E. & Co., 34, Maiden-lane, Covent-London, W.C.

, James W., 2, Carlisle-street, Soho-London, W.

ght Carbon Co., 133A, Great Suffolk-ough, London, S.E. Every descrip-arbons for Electrical purposes. *See advertisers.*

ighting Supply & Fitting Co., Ltd. id Works: 28, York-street, West-London, S.W. (Manager, W. Bridges *See index to advertisers.*

Co. (F. R. Francis, C.E., Manager), egraph Works, Hatton-garden, E.C., ford-road, London, N.W.

F. & Co., Long-lane, Smithfield, E.C. *See index to advertisers.*

& PHILLIPS, 14, Union-court, Old., London, E.C.; & Victoria Works, , S.E. *See index to advertisers.*

ngineering Co., 1, Wardrobe-place, Commons, London, E.C.

Carbon Manufacturers—continued.

LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Electrical sundriesman. Stock kept of various classes of carbons, plates, rods and cylinders for all classes of electrical and medical batteries. Carbons moulded to any sketch. Any class of special battery carbons built. Sole maker of the carbonized asbestos, giving a surface not to be obtained by any other means. *See index to advertisers.*

LIEPMANN CARBON CO, LTD., Nelson Wharf, Millwall, London, E. Manufacturers of the Liepmann Carbon Rods (pure, uniform, dense), Battery Plates, Filaments, &c. *See index to advertisers.*

WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Pencils and Plates in stock. Supplies contracted for, tests made.

Case Makers.

F.—

F.—

YOUNG, FREDERICK & CO., 11, Clerkenwell-green, London, E.C. *See index to advertisers.*

Chandelier, Lustre, Glass and Brass Makers for all Electrical purposes.

F.—

G.—

BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1872).

Charcoal Makers and Dealers.

F.—Charbon de bois.

G.—Meiler und Holzkohlen-Händler.

Lancaster, Edwin & Son, 27, Rockingham-street, London, S.E.

Scott, R. & Co., Marsh-gate-lane, Stratford, London, E.

Chemical Appliance Manufacturers.

F.—Appareils de Chimie.

G.—Chemische Apparate.

Apps, A., 433, Strand, London, W.C.

Hart, F. W., 8 & 9, Kingsland-green, London, E.

How, James & Co., 73, Farringdon-st., London, E.C.

Mottershead & Co., 7, Exchange-st., Manchester.

ORME & CO., 65, Barbican, London, E.C.

**Chemical Glass and Apparatus
Manufacturers.**

F.—Verrerie de Chimie.

G.—Chemisches Glas.

- Bachhoffner, Charles, St. Andrew's-bdgs., St. Andrew's-st. London, E.C.
 Baird & Tatlock, 100, Sauchiehall-st., Glasgow.
 BECKER, F. E. & CO., 34, Maiden-lane, Covent-garden, London, W.C.
 Brayne, Francis & Co., Three Mills-lane, Bromley-by-Bow, E.
 Cubley & Preston, 4, High-st., Sheffield.
 DOULTON & CO., 28, High-st., Lambeth, London, S.E.
 Griffin, John J., & Sons, 22, Garrick-st., London, W.C.
 Gritton, W. H. & Sons, Holland-st., London, S.E.
 HOUGHTON, G., & SON, 89, High Holborn, London, W.C.
 Mace & Haldane, 77 & 78, Milton-st., Cripple-gate, London, E.C.
 May, Roberts & Co., 9, Clerkenwell-road, London, E.C.
 Oakley, Walter Henry, 202, Grange-rd., London, S.E.
 Poths, H. & Co., 4, Sugarloaf-court, Leadenhall-st., London, E.C.
 Powell, Samuel, 57, Newcomen-street, Borough, London, S.E.
 Ruels & Co., 28, Goldhawk-road, Shepherd's-bush, London, W.
 Shea, John, 184, Cator-st., Peckham, S.E.
 Smith, Thomas & Co., Verney-road, Old Kent-road, London, S.E.
 STIFF, J., & SONS, High-st., Lambeth, S.E.
 Retorts, receivers, store jars, plumbago and clay crucibles, porous cells, cylinders, plates, stoneware, insulators, and all other pottery for Electric and Telegraph work. Prize Medal.

Chemists—Analytical.

F.—Chimistes Analytiques.

G.—Analytiker.

- Attfield, Professor John, F.R.S., 17, Bloomsbury-square, London, W.C.
 Bamber, Hy. K., 5, Westminster-chambers, London, S.W.
 Bannister, Richard, The Laboratory, Somerset-house, London, W.C.
 Bell, Hy. Stowe, F.C.S., 46, High-st., Sheffield.
 Bischof, Gustav., 4, Hart-st., Bloomsbury, London, W.C.
 Bland, J. H., & Co., 75, Blackfriars-rd., London, S.E., and 27, Kirby-st., Hatton-garden, London, E.C.
 BURGHARDT, DR. CHARLES, A., 110, King-st., Manchester, and Victoria University, Owen's College, Manchester (specialities in damaged india rubber goods.)
 Burgoyne, Burbidges, Cyriax & Farries, 16, Coleman-st., London, E.C.

Chemists—Analytical—continued.

- Cameron, M. J., 52, Lime-st., London, 1
 Carpenter, H. S., 32, Holborn-viaduct, E.C.
 Claudet, F., 6 & 7, Coleman-st., London
 Cleaver, Edward Lawrance, 289A, King Chelsea, London, S.W.
 Cooper, W. John, 7, Westminster-chambedon, S.W.
 Cownley, Alf. John, F.I.C., F.C.S., 1 church-avenue, London, E.C.
 Cripps, Joseph, 27, New Broad-st., London
 Cross, Chas. Samuel, 606, Old Ford-road, London, E.
 Duprè, Auguste, Ph.D., F.R.S., F.C.S., brook-gardens, Kensington, London, 1
 DYER, BERNARD, F.C.S., F.I.C., 1 Tower-st., London, E.C.
 Edger, A. J. M., 13, Dean-st., Newcastle
 Foster, Professor Wm., M.A., F.C.S. Middlesex Hospital, Berners-st., London
 Gerland, B. W., 124, Buxton-rd., Macclesfield
 Gore, G., LL.D., F.R.S., 67, Broad-st., Harkness, Wm., Laboratory, Somerset London, W.C.
 Harris, Hy. Penley, F.C.S., 14, Buck Palace-road, London, S.W.
 Hobson, A. H., F.R.M.S., 17, Regent-st., S.W.
 Horn, William, P. 21A, Broad-st., Birmingham
 Hughes, John, F.C.S., 79, Mark-lane, E.C.
 Jackson, Edgar, 106, Queen Victoria-st., London, E.C.
 Johnson, Matthey & Co., 74 to 80 Hatfield, London, E.C.
 Jones, E. W. T., F.I.C., F.C.S., 10, Victoria Wolverhampton.
 Kingzett, Chas. T., F.I.C., F.C.S., 2, Letc buildings, Three Colt-lane, London, E
 Lowe, Wm. F., Goss-st., Chester.
 Neilson & Bayne, 173, Fenchurch-st., E.C.
 Nesbitt, J. C. & Son, 38, Gracechurch-st., London, E.C.
 Pattinson & Stead, 5, Shetland-rd., Mid
 Pattinson, John, 75, Side, Newcastle.
 Paul, Benjamin Horatio, 1, Victoria-st. minster Abbey, London, S.W.
 Penney, D. M., 15, High-st., Hull.
 Price, Ashley P., 47, Lincoln's Inn Field don, W.C.
 Price, Dr. David S., 26, Great George-st don, S.W.
 Proctor, William Wilson, 33 & 35, Side Dean-st., Newcastle-on-Tyne.
 Redwood, Dr. Theoph., 17, Bloomsbury-s don, W.C.
 Rice, R. S., 33, Wharf-st., Leicester.
 Smetham, Alfred, 18, Brunswick-st., Li
 Soward, Alfred Walter, 5, Sergeant's In don, E.C.
 Spencer, Thos., 32, Euston-square, London

ts—Analytical—continued.

George Naylor, The Laboratory,
set-house, London, W.C.
Wm. Hy., F.R.M.S., F.C.S., 2, Queen's-
St. John's Wood, London, N.W.
ank L., 8, Victoria-chambers, London,
Augustus, Ph.D., F.R.S., 11, Salis-
square, London, E.C.
James Alfred, 7, Westminster-
ers, Victoria-st., London, S.W.
H., 7, Union-court, Old Broad-street,
n, E.C.

**emists—Manufacturing and
Metallurgical.**

Chimistes Industriels et Métallurgiques.

G.—Chemische-Fabriken.

Shirley (William Kirk, Manager), Nor-
Killammarsh, Chesterfield.
& Sons, 164, Upper North-street, Poplar,
n, E.
& W., Wallsend, Newcastle.
Ammonia Co., Ltd., 201, West-st., S.S.,
w.
G. H., Howden Dyke, Howden.
uries' Hall, Water-lane, Blackfriars, Lon-
C.C.
Etruria-vale, Hanley, Stafford.
Oliver Ross, 3, Canning-st., Calton,
w.
Chemical Co., Bashford.
, W. H., & Co., Charlbury, Oxon.
noniac, bichromate of potash, manganese.
Chemical Co., 15, Grey-st., Newcastle.
W., Lower Turn Lee, Glossop.
F., Forest Side, Sutton-in-Ashfield.
W. A., 91 & 92, Constitution-hill,
ingham. Cyanide of Potassium & Nickle
Chemical Co., Ltd., 42, Mosley-st.,
stle.
& Co., T. F., 51, High-st., Hull.
J. T., 168, Deanagate, Manchester.
graphic purposes.
ate Chemical Works, Chestergate,
ort.
Vettleships & Bailey, 15, Belvoir-st.,
ter.
H. & Son, Porthill, Longport, Stoke-on-
at.
hn, 44, Dean-st., Newcastle.
& Smith, Catherine-st., Lichfield-rd.,
gham.
c Son, 1A, Charles-st., Leicester.
Laird, 41, Candleriggs, Glasgow, and
ovan-rd., Govan.
ank R., 121 & 123, Camden-st., B'ham.
c Preston, 4, High-st., Sheffield.
, & Co., Brickhouse-lane, Gt. Bridge,
Bromwich.
n Chemical Co., Ltd., 27, St. Vincent-
Glasgow.

**Chemists—Manufg. & Metallurgical—
continued.**

Felting, Coal, Iron & Chemical Co., Limited,
Royal Insurance-buildings, Newcastle.
Forster & Gregory, Greyhound-lane, Stroatham-
common, London, S.W.
Frew, John & Co., 120, Mid Wharf, Port Dundas,
- Glasgow.
Galen Chemical Company, Ettingshall, Wolver-
hampton.
Galloway & Co., Victoria Chemical Works, Pol-
lockshaws, Glasgow; office, 156, St. Vincent-
street.
Gartley, John B., 22, Springfield-ct., Glasgow.
Gibson & Mathie, 49, Brown-street, Glasgow.
Hannay, J. B., Annfield Chemical Works,
Sword-street, Glasgow.
Hardman, J. M., Stoke-on-Trent.
Harris, Philip & Co., 9, Bull-ring, Birmingham.
Harrison, G., Holderness-road, Hull.
Hart, G. W., Lowry's-wharf, Wilmington-
groves, Lime-street, Newland.
Heath, Charles & Co., Ouseburn, Newcastle.
Hill, James, 288, Argyle-street, Glasgow.
Holden & Co., Whitehouse, Erdington, B'ham.
Hunt, W. & Sons, Alkali Works, Leabrook,
Tipton, Stafford.
Hurlet & Campsie Alum Co., 115, Wellington-
street, Glasgow.
Hyde, J., Higo-street, Wednesfield.
Jarrow Hill Chemical Co., Lombard-street, New-
castle.
Johnson, Matthey & Co., 74 to 80, Hatton-
garden, E.C.
Jones, W. & Co., Fleet-road, Middlesbrough.
Kelvin Chemical Co., Craighall Works, Maryhill.
Kirk, W., Killammarsh, Chesterfield.
Litchfield, J., 50, High-street, Longton, Stafford.
Major, J. C., Monmore-green, Wolverhampton.
Matthews, Son, & Co., Eastgate, Great Driffeld.
Meggitt, S. & Sons, Sutton-in-Ashfield.
Montgomery, J. & Co., 18, Bishop-street, Port
Dundas, Glasgow.
Morris Bros., Misterton, Gainsbro'.
Newcastle Chemical Works, Ltd., 4, Quayside,
Newcastle.
Orr, J. B., 46, Cannon-street, E.C.
Phillip, P. & Co., 57, Norfolk-street, Glasgow.
Priory Chemical Company, Limited, 37, Napier-
shall-street, Glasgow.
Reade Bros. & Co., Victoria-st. Works, Monmore
green, Wolverhampton.
Richardson, J. & Co., Friar-lane, Leicester.
Ridyard, W., Oxford-street, Bilston, Stafford.
Roberts, Dale & Co., St. James'-street, Latch-
ford, Warrington.
Robinson, N. E. & Co., 13, Milestone-lane,
Leicester.
Sadler, T. A., Cleveland Chemical Works,
Middlesbrough.
St. Rollox Chemical Works, 229, Castle-street,
Glasgow.
Scott & Co., Marsh-gate-lane, Stratford, E.
Sharon Chemical Co., Little Chester, Derby.

Chemists—Manufg. & Metallurgical—
continued.

Shorthouse, J. & Sons, 65, Shadwell-st., B'ham.
South Down Metal & Chemical Co., Limited, 8,
Old Jewry, London, E.C.
Stevenson, Carlisle & Co., 23, West Nile-street,
Glasgow.
Sturge, John & Edmund, 18, Wheeley's-lane,
Birmingham.
Tipton Chemical Works, Tipton, Chesterfield.
Tennant, Chas. & Co., St. Rollox, and 115, St.
Vincent-street, Glasgow.
Warburton & Sons, Chemical Works, Worksop.
Ward, Wm., 71, New-street, West Bromwich.
Washington Chemical Company, 26, Grey-street,
Newcastle.
White, Wm. Henry, Westmore, Long Benton,
Newcastle.
Wilkinson, T., 24, Newgate-street, Newcastle.
Williamson, J. C. & Co., Exchange-buildings,
Quayside, Newcastle.
Williamson, J. H., Golden-hill, Stoke-on-Trent.
Wilson, James Thompson, Spital, Berwick-on-
Tweed.
Woolley, James, Sons & Co., 69, Market-street,
Manchester.
Young & Strang, 30, Gordon-street, Glasgow.

Clock Wheel Makers.

F.—Roues d'horlogerie.

G.—Uhräder-Fabriken.

Beard, John, 28, Corporation-row, London, E.C.
OPPERMANN BROS., Brewhouse-yard, 172, St.
John's-street, London, E.C. *See index to adver-*
tisers.
Smith, J. & Sons, 18, St. John's-square, Cler-

Clutch Manufacturers.

F.—Griffes de transmission.

G.—

Bagshaw, J. & Sons, Batley, Yorkshire. Addy-
man's American Friction Clutch.
Hall, C. E., Woodside, Meersbrook Bank,
Sheffield.
Walker, Sidney F. & Oliver, 195, Severn-road,
Cardiff, and at Nottingham.

Coils—Medical & Intensity.

F.—

G.—

Economical Electric Supply Association, Chur-

Coil (Wood) Makers for Batteries.

F.—

G.—

Franks, Robinson & Co., 76, Milton-st., Fore-
st., London, E.C. *See index to advertisers.*
Irvin & Sellers, Preston. *See index to advertisers.*

*** Compass Adjusters in Iron Ve**

F.—

G.—

Morrison, Frank, 19, Robertson-st., Gla
Wiggins, Fredk. & Sons, 10, King-st.,
hill, London, E.C.

Compass Centre Maker.

F.—

G.—

HOLDSWORTH, SAMUEL, 54, Spei
Clerkenwell, London, E.C.

Compass Makers.

F.—

G.—

Castle & Pagan, Commercial-road, Hull.
White, Jas., 241, Sauchiehall-street, Gla

*** Composition Makers—Boiler I
Conducting.**

F.—Calorifuge (Fab. de).

G.—Composition zur Verdichtung der Dam,
Leabon & Corfe, Bridge-st. and Ploug
Homerton, London, E.
Orme, Fredk. & Co., 9, St. Andrew's
Holborn-viaduct, London, E.C. *See*
advertisers.

PAYNE & CO., 37, Eastcheap, London, I
WALLINGTON, GEO., jun., Frogha
Warrington.
Wotherspoon, J. & Sons, 97, Welling
Glasgow.

*** Composition Makers—for Preve
Incrustation in Steam Boiler**

F.—Désincrustants.

G.—Composition zur Verhütung des Incrusti
Dampfkessel.

BARR, ROBERT ("Ehrenbergh"), 94
India Dock-road, London, E.
Fearn, Francis H. & Co., Trafalgar Wor
Kent-road, London, S.E.
Hailwood, J. T., Ramsay-street, Rochdale
LEABON & CORFE, Bridge-st. and I
lane, Homerton, London, E.
Orme, Fredk. & Co., 9, St. Andrew's
Holborn-viaduct, London, E.C. *See*
advertisers.
Townsend & Young, Wellington-st., All S
street, Bristol.

Contractors—Electric Light.

F.—Eclairage électrique (Entrepreneurs)

G.—Electricches Licht—Contractoren

Anderson & Munro, 136, Bothwell-st., Gl
Anglo-American (Brush) Electric Light Co
tion, Limited, 108, Belvedere-rd., La
London, S.E.

ctors—Electric Light—continued.

Spanish (Brush) Electric Light & Power Limited, 110, Cannon-st., London, E.C.
 .., 433, Strand, London, W.C.
 asian Electric Light, Power & Storage Limited, 4, Copthall-bldgs., London, E.C.
 , Henry, & Co., 131, Hope-st., Glasgow.
 S, WILLIAM & SONS (established
 , 9 to 15, New Bartholomew-st., Bir-
 ham; Dom Moltshanoff, Negliuny, Mos-
 and 38, West Smithfield, London, E.C.
 actors to the Cities of Moscow, Mexico,
 'aulo, &c. Gas Companies.
 Electric Light Co., Limited, offices &
 , Turk's Head-yd., Turnmill-st., London,
 Gold Medal at the Paris Electrical Exhi-
 , 1881. Gold Medal at the Crystal
 e Electrical Exhibition, 1882. Sole
 ees for the well-known Gramme Electric
 ing Machine. Contractors for the supply
 etric Light on all approved systems.
 Electric Light & Power Co. for the
 el Islands & Isle of Man, Limited,
 ishopsgate-st. Within, London, E.C.
 lectric Light & Power Co. of Scotland,
 ed, 9, New Broad-st., London, E.C. (*In
 ation*).
 Midland Electric Light & Power Co.,
 ed, 4, Great Winchester-street-buildings,
 m, E.C.
 J. J. & Co., 154, Westminster-bridge-
 London, S.E.
 Shaw, 10a, Victoria-buildings, Victoria-
 anchester. *See index to advertisers.*
 TON, R. E. & Co., 4, Queen Victoria-st.,
 m, E.C. Contractors to the Swan United
 ic Light Company. *See index to adver-*

 m-Winfield, Electric Light Associa-
 Cambridge-street Works, Birmingham,
 , Farringdon-street, London, E.C. *See
 to advertisers.*
 ES, J., & SONS, 147, Houndsditch,
 m, E. *See index to advertisers.*
 Bros., 32, Queen Victoria-st., Lon-
 E.C.
 , George, 8, Victoria-street, Shaw-heath,
 port.
 Electric Light & Power Co., Limited,
 eat Winchester-st., London, E.C.
 ic Electric Co., Limited, 9, Soho-sq.,
 m, W.
 , Indian & Colonial Electric Co., Limited,
 6, Throgmorton-avenue, London, E.C.
 & Swan Electric Light Co., Limited, 74,
 an-st., London, E.C.
 s, Henry, 2, Victoria Mansions, Victoria-
 'estminster, London, S.W. *See last page
 rtisements.*
 RIC FINANCE ASSOCIATION, 13 &
 ing-st., Cheapside, London, E.C. Estab-
 to financially assist inventors and to
 p and sell approved inventions. *Arthur
 y, General Manager.*

Contractors—Electric Light—continued.

Electric Lighting Contract & Maintenance Co.,
 Limited, 1, Queen Victoria-st., London, E.C.
 Electric Lighting Supply & Fitting Co., office
 and works, 28, York-st., Westminster, London,
 S.W. *See index to advertisers.*
 Electric Motor Syndicate, Limited, 3, Copthall-
 buildings, London, E.C.
 Electric "Sun" Lamp & Power Co., Limited,
 St. Margaret's Offices, Victoria-st., West-
 minster, London, S.W.
 Francis & Co. (F. R. Francis, C.E., Manager),
 Eagle Telegraph Works, Hatton-garden,
 London, E.C., and Lawford-road, N.W.
 French Electrical Power Storage Co., Limited, 71,
 Queen st., London, E.C.
 French Metropolitan General Electric Co., Lmtd.,
 71, Queen-street, London, E.C.
 Gent, J. & Co., Faraday Works, King Richard's-
 road, Leicester. *See index to advertisers.*
 Great Western Electric Light & Power Co.,
 Limited, 4, Great Winchester-street-buildings,
 London, E.C.
 GRIFFITH & CO., 4, Queen Anne's-gate,
 London, S.W. Works, Reading. *See index to
 advertisers.*
 Groth, L. A., 30, Finsbury-pavement, London,
 E.C.
 Gulcher Electric Light & Power Co., Limited,
 4, Coleman-st., London, E.C.
 Hammond Electric Light & Power Co., 110,
 Cannon-st., London, E.C.
 HENLEY'S, W. T., TELEGRAPH WORKS
 CO., LIMITED, office, 8, Drapers'-gardens,
 London, E.C. *See index to advertisers.*
 Indian & Oriental Electrical Storage & Works
 Co., Limited, 19, Great Winchester-st., Lon-
 don, E.C.
 INTERNATIONAL ELECTRIC CO., 4, Copt-
 hall-buildings, London, E.C.
 Jablochkoff Electric Light & Power Co., Limited,
 1 & 2, Gt. Winchester-st., London, E.C.
 Johnson & Phillips, 14, Union-court, Old Broad-
 st., London, E.C., & Victoria Works, Charlton,
 London, S.E. *See index to advertisers.*
 Laing, Wharton & Down, 8 & 9, Holborn-via-
 duct, London, E.C. *See index to advertisers.*
 Lyons Electrical Power Storage Co., Mansion
 House-chambers, 11, Queen Victoria-street,
 London, E.C.
 Manchester & District Edison Electric Light Co.,
 Limited, 19, Victoria-buildings, Manchester.
 Markland Electric Lighting, Power & Regulator
 Co., Limited, 8, Tokenhouse-yard, London,
 E.C.
 Maxim Weston Electric Co., Limited, 47, Cannon-
 st., London, E.C.
 METROPOLITAN (BRUSH) ELECTRIC
 LIGHT & POWER CO., LIMITED, 110,
 Cannon-st., London, E.C.
 National Co. for the Distribution of Electricity
 by Secondary Generators, Limited, 18, War-
 wick-st., Regent-st., London, W.
 NORMAN & SONS, 217 to 223, Argyle-street,
 Glasgow, and at Barrow-in-Furness.

Contractors—Electric Light—continued.

- PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*
- "PILSEN," "JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St. Stephen's-chambers, Telegraph-st., London, E.C. *See index to advertisers.*
- Provincial "Brush" Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.
- REID BROS., 12, Wharf-road, City-road, London, N. *See index to advertisers.*
- River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.
- Rogers, F. M., 21, Finsbury-pavement, London, E.C.
- Rowan, F. J., 134, St. Vincent-st., Glasgow.
- SHIPPEY BROS., 13 & 14, King-st., Cheapside, London, E.C., Electrical Engineers and Light Contractors. Sole Manufacturers of the Universal Incandescent Glow Lamps, the Simplex Dynamo Machines and Arc Lamps. *See index to advertisers.*
- SIEMENS BROS. & CO., 12, Queen Anne's-gate, Westminster, London, S.W.
- SNELL & GLENDENING, St. Paul's-buildings, 21, Paternoster-row, London, E.C. *See index to advertisers.*
- South African (Brush) Electric Light & Power Co., Limited, 5, Copthall-ct., London, E.C.
- South Eastern (Brush) Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.
- Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*
- Standard Fyfe-Main Electric Lighting Co., Back-lane, Brixton, London, S.W.
- Stuart Electric Light & Power Co., Limited, 11, Queen Victoria-st., London, E.C.
- Union Electric Light & Power Co., Limited, 2, Copthall-buildings, Throgmorton-st., London, E.C.
- UNIVERSAL ELECTRIC LIGHT CO. (Fredk. Shippey, Sec.), 13 & 14, King-st., Cheapside, London, E.C. Manufacturers of the D. P. Storage Batteries, &c., &c., Thermopiles, &c., &c.; works, 34, Charles-st., Hatton-garden, London, E.C.
- UNIVERSAL INVENTORS & PATENTEES FINANCIAL COMPANY, LIMITED, 30, Finsbury-pavement, London, E.C., undertakes all kind of electric lighting on an entirely new principle, the same as is now used in the consumption of gas, i.e., on the quantity only of electricity used, or on the hire system, with the option of purchasing the plant after a fair trial has been made. Private houses, works, shops, carriages, &c., &c., will be supplied with electric light free from danger and without any kind of machinery at a trifling cost. Correspondence invited.
- Varley Patents Proprietary Co., Limited, Mildmay Park Works, Ball's-pond, London, N.
- Walker, Sidney F., & Oliver, 195, Severn-road, Cardiff, and at Nottingham.
- Woodon & Irish, 30, Borough-road, Sunderland.

Contractors—Electric Light—continued.

- West Middlesex Electric Lighting Co., Ltd., 14, King-street-west, Hammersmith, London, W.
- Whalley, A., 71, Fleming-square, Blackburn.
- WOLVERHAMPTON ELECTRIC LIGHT STORAGE & ENGINEERING CO. (The Packer & P. Bedford Elwell), Commercial Works, Wolverhampton.
- WOODHOUSE & RAWSON, 11, Queen's-toria-street, London, E.C., contractors in trade. Estimates given for every class of work. *See index to advertisers.*

Contractors, Telegraph.

F.—*Telegraphes (Entrepreneurs de).*

G.—*Telegraphenbau—Contractoren.*

- Apps, A., 433, Strand, W.C.
- Bailey, W. H. & Co., Essex-street, Southampton, Manchester.
- Bethell, J., & Co., 179, Regent-rd., Livery, Clegg & Shaw, 10A, Victoria-buildings, Victoria, Manchester.
- CLARK (L.), MUIRHEAD & CO., 23, Regent-st., Westminster, London, S.W.
- Davis, J. & Co., 51, Tyrell-st., Bradford.
- FOX, EDWIN & CO., LIMITED, 100, 5, Gt. Winchester-st., E.C. Works: Mill Lane, London, E.
- Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton Garden, London, E.C., and Lawford-road, London, E.
- Fuller, John Crisp & Son, 547, Old Ford Road, London, E.
- Garnham & Co., Sash-court, Wilson-st., Ladbury, London, E.C. *See index to advertisers.*
- Gent, J. T., & Co., Faraday Works, Richard's-rd., Leicester. *See index to advertisers.*
- Graham, D. & G., 267, Sauchiehall-st., Glasgow.
- GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W., Works, Reading. *See index to advertisers.*
- HENLEY'S (W. T.) TELEGRAPH WORKS CO., LIMITED, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*
- India Rubber, Gutta Percha, & Telegraph Works Co., Ltd., 100, Cannon-st., London, E.C.
- Iron Wire, Wire Rope, & Fencing Co., 2, Port corner, Westminster, London, S.W.
- Jobson Bros., Phoenix Works, Dudley.
- Johnson & Phillips, 14, Union-ct., Old Broad-st., London, E.C., and Victoria Works, Chancery-lane, London, E.C. *See index to advertisers.*
- JOHNSON, R. & NEPHEW, 8, Gt. Winchester-st., London, E.C.
- Lewis, J. Slater, 28, Hamilton-st., Birkenhead, works, Helsby.
- Radcliffe, A. H. W., 5, Carr's-lane, High-st., Birmingham.
- Ramsden, Camm & Co., Brighthouse, York. London office, 72, King William-st., London, E.C.
- REID BROS., 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*

ctors—Telegraph—continued.

G. F., 5, Great Winchester-st., London,
D. & Co., 2, Post's-corner, Westminster,
on, S.W.
ULIUS, 108, Gt. Russell-st., Blooms-
and Bedford Telegraph Works, Store-
edford-sq., London, W.C.
Bros. & Co., 12, Queen Anne's-gate,
on, S.W.
James E. & Samuel, 3, Queen-street-
and Cannon-street, London, E.C.
Jno., Neal-st., Spon-la., W. Bromwich.
son, Reynolds, & Co., Castle Works,
erhampton.
Co., Ashwin-st., Dalston-junction, E.
Patents Proprietary Co., Limited, Mild-
Park Works, Balls Pond, London, N.
Sidney F., & Oliver, 195, Severn-road,
ff, and at Nottingham.
Irish, 30, Borough-road, Sunderland.

Contractors, Telephone.

F.—Telephones (Entrepreneurs de).

G.—Telephonen—Contractoren.
Shaw, 10A, Victoria-buildings, Victoria-
lanchester. *See index to advertisers.*
iated Telephone Construction & Main-
ce Co., Limited, 109, Farringdon-road,
on, E.C.
J., & Son, All Saints' Works, Derby.
George, 8, Victoria-st., Shaw Heath,
port.
J. T. & Co., Faraday Works, King
urd's-road, Leicester. *See index to ad-
ers.*
EY'S (W. T.) TELEGRAPH WORKS
LIMITED, Offices, 8, Drapers'-gardens,
on, E.C. *See index to advertisers.*
ohn, Nelson-st., Swansea.
N. C., 140, Douglas-st., Glasgow.
d Telephone Co., 3, Bottle-lane, Not'ham.
rge's Telephone Co., Ltd., 20, Bucklers-
London, E.C.
J. Berger & Co., 31, Lombard-st., Lon-
E.C. *See index to advertisers.*
ER, SONS, & Co., New Station-road,
ield.
me Company of Ireland, Limited, Com-
ial-buildings, Dublin.
Sydney F., & Oliver, 195, Severn-road,
ff, and at Nottingham.
ON & IRISH, 30, Borough-rd., Sunder-
ouse & Rawson, 11, Queen Victoria-street,
on, E.C.

per Companies and Merchants.

F.—Cuirre (Compagnies de).
G.—Kupfergieesserei und Händler.
ELL, JOHN & SONS, 28, Pickford-st.,
ingham.

Copper Companies & Merchants—continued.

BLEWS, WILLIAM & SONS, 9 to 15, New
Bartholomew-st., Birmingham; Dom Molt-
shanoff Negliuny, Moscow; and 38, West
Smithfield, London, E.C., contractors to the
cities of Moscow, Mexico, San Paulo, &c. Gas
Companies. (Established 1782.)
Clegg & Shaw, 10A, Victoria-buildings, Victoria-
st., Manchester.
Grenfell, Pascoe & Sons, 14, Novia Scotia,
Liverpool, and Middle & Upper Bank Copper
Works, Swansea.
Smith, J. & Son, 18, 23 & 24, St. John's-square,
London, E.C.
Stanton Bros., 73, Shoe-lane, London, E.C.
Refined copper plates for electrotipers.
Vivian, H. H. & Co., 46, George-st., Parade,
Birmingham.

*** Copper Smelters and Refiners.**

F.—Cuirre (Raffineurs de).
G.—Kupfer-giessereien.
Bolton, T. & Sons, Mersey Copper Works,
Widnes, Cheadle, and Birmingham.
Lees & Saunders, 5, Warstone-lane, Birmingham.
M'Crindell, Schaw & Co., 180, West George-st.,
Glasgow.
Williams, William, Thistle-st., Hebburn New
Town, Newcastle-on-Tyne.

**Copper Tape Manufacturers, for Elec-
trical Purposes.**

F.—
G.—
Clifford, C. & Son, Fazeley-st., Birmingham.
CUTTING, R. C. & Co., Wardrobe-chambers,
Queen Victoria-st., London, E.C.
Glover, W. T. & Co. Chief office: 25, Booth-
st., Manchester. London office: 28, Budge-
row, E.C. Glasgow office: 85, Buchanan-
st. *See index to advertisers.*

*** Copperas Manufacturers.**

F.—Couperose (Fab. de.).
G.—Eisenvitriol.
Lawson, Jas. Coldwell, 38, Quayside, Newcastle.

*** Coppersmiths & Braziers.**

F.—Fondeurs en Cuirre et Bronze.
G.—Kupferschmiede und Gürtler.
Benham & Foud, Chandos Metal Works, 40, 41,
and 42, Chandos-st., Strand, W.C.
BLEWS, WILLIAM & SONS, 9 to 15, New
Bartholomew-st., Birmingham; Dom Molt-
shanoff Negliuny, Moscow; and 38, West
Smithfield, London, E.C. Contractors to the
Cities of Moscow, Mexico, San Paulo, &c. Gas
Companies. (Established 1782.)
OWEN, SAML., & Co., 22, Whitefriars-street,
London, E.C.
VULCAN MANUFACTURING CO., Vulcan
Works, Rocliffe-street, City Garden-row,
London, N. *See index to advertisers.*

Core Serving Machine Manufacturers.

F.—

G.—

BARRACLOUGH, T. & CO., LIMITED.
Offices: 8, King-street; Works: Whitley-street, Rochdale-road, Manchester. *See index to advertisers.*

MOFFATT, ALEXANDER & Co., 26, College-st., Dowgate-hill, London, E.C. *See index to advertisers.*

*** Cotton Waste Merchants.**

F.—*Déchets de Coton.*

G.—*Putzlappen-Händler.*

BACK, USHER, 77, Blackfriars-road, London, S.E.

BLEWS, WILLIAM & SONS (agents), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltchanoff Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)

Boardman Bros., Sharp-st. Mills, Rochdale-rd., Manchester.

Card, Nathaniel & Co., Smyrna Twist Mills, Rochdale-rd., Manchester.

DEFRIES, J., & SONS, 147, Houndsditch, London, E. *See index to advertisers.*

Findlay, J. & Co., 113, Virginia-place, Glasgow.

Goodwin, Wm. & Co., 36, Primrose-street, Bishops-gate-street, London, E.C.

MORGAN R. & SON, 217, Blackfriars-road, London, S.E. *See index to advertisers.* Warehouse: 13, Charles-street, London, S.E.

ROSE, SIR W. A., & Co., 66, Upper Thames-street, London, E.C.

*** Crucible Manufacturers.**

F.—*Creusets (Fab. de).*

G.—*Schmelztiegel-Fab.*

Bagshaw, George & Son, Headford Works, 42, Egerton-lane, & 50, Headford-st., Sheffield.

Brayne, F. & Co., Bow Pottery, Three Mills-lane, Bromley-by-Bow, London, E.

DOULTON, HENRY & CO., Granville-wharf, Granville-street, B'ham; 100, Soho, Liverpool; chief Office: Lambeth Pottery, London, S.E. Medals at numerous Exhibitions.

HARPER & MOPRES, 2, Crescent-wharf, Cambridge-street, Birmingham.

SMITH, GEORGE, Fauldhouse-street, Rutherglen, Glasgow.

STIFF, JAS. & SONS, High-st., Lambeth, London, S.E. *See index to advertisers.*

WATERHOUSE, JAS. C., Soho Works, Wakefield. Sole maker of Waterhouse's patent crucibles, the best yet introduced. Plumbago for moulders and lubricating.

*** Designers and Draughtsmen**

F.—*Dessinateurs.*

G.—*Zeichner.*

Groth, L. A., 30, Finsbury-pavement, L E.C.

Jamieson, Andrew, C.E., F.R.S.E., &c., Pri College of Science and Art, 38, Bath-Glasgow.

Messer & Thorpe, 8, Quality-court, Chancery-lane, London, W.C.

MORRISON, G. & M., 166, Buchanan-Glasgow.

SNELL & GLENDENING, St. Paul's 21, Paternoster-row, London, S.E.

Distribution of Electricity by Secondary Generators.

National Co. for the Distribution of Electricity by Secondary Generators, Limited, 18, Wick-street, Regent-street, London, W.

*** Drain Pipe (Stone-ware) Manufacturers.**

F.—*Tuyaux en Poterie (Fab. de).*

G.—*Tonröhren Fabriken.*

DOULTON, HENRY & CO., Granville-Granville-st., Birmingham; also Rowley Stafford; Chief Office, Lambeth P London, S.E.

Knowles, J. & Co., 8, Euston-road. Dep Pancras Goods Station, London, N.W.

STIFF, JAMES & SONS, London P High-street, Lambeth, S.E. (Estab 1751.) *See index to advertisers.*

*** Draining Tool Manufacturer**

F.—

G.—*Werkzeug zum Gebrauch für Rohrlöcher.*

Orme, Frederick & Co., 9, St. Andrew's Holborn-viaduct, London, E.C. *See index to advertisers.*

Driving Band Fastener-Makers

F.—

G.—

SELI, SONNENTHAL & CO., 83, Victoria-street & Lambeth-hill, London Sonnenthal's patent.

Chase, Wm. H., junr., 103, Fenchur London, E.C.

Driving Band Makers—Cotton

F.—*Courroies de Transmission—Coton*

G.—*Maschinenriemen—Zug.*

Aitken, Thos. & Son, Helmschore, nr. Manc

BINNEY & SON, 62, Queen Victoria-E.C., and Catherine-street, City-road, L E.C.; 22, Wellington-street, Leeds; 50 Howard-street, Glasgow; and 63, street, Birmingham.

g Band Makers—Cotton—continued.

J. & Sons, Charlesworth, Broadbottom.
 Maurice, 130, Queen Victoria-st.,
 n, E.C.
 1, Wm. & Co., 36, Primrose-street,
 psgate, London, E.C.
 11, Robert, Palmerston-st., Bollington,
 esfield.
 Scott & Co., Ropery and Flax Mills,
 port.
 ottom, J., Charlesworth, Broadbottom.
 rth, David, Bridge-st., Stalybridge.
 L., Simmondley, Glossop.
 W. & Sons, 86, Queen-street, London,

Son, Simmondley, Glossop.
 J. H., Kinder Lee Mills, Charlesworth,
 bottom.
 y, F. & Co., Cheltenham-st., Pendleton,
 easter. Camel-hair Belting.
 om, J., Holehouse Mills, Charlesworth,
 bottom.
 om, Samuel, Meadow Mills, Glossop.
 H BROS., 89, City-road, London, N.
See index to advertisers.
 W., New Mills, Stockport.

ag Band Makers—India Rubber.

Courroies de transmission—Indiarubber.
G.—Maschinenriemen—Indiarubber.
 Vale Rubber Co., Limited, 13, Bow-
 London, E.C.
 Y & SON, 62, Queen Victoria-street,
 n, E.C., and Catherine-street, City-road,
 n, E.C.; 22, Wellington-st., Leeds; 50,
 Howard-street, Glasgow, and 63, Broad-
 Birmingham.
 ham India Rubber Co., Now-st. and
 Henry-st., Birmingham.
 Wm. & Co., 36, Primrose-st., Bishops-
 London, E.C.
 son, A. & Co., 3, Great Winchester-st.,
 n, E.C.
 bber, Gutta Percha & Telegraph Works
 ny, Limited, 106, Cannon-st, London,

T BRITISH

ER CO., LD.,

ouses: 6, Char-

., Mosley-st.,

ster; 57, Moor-

, London, E.C.;

15, Oswald-st.

v. Works, Castle

Edinburgh.

H BROS., 89, City-road, E.C. See index

rtisers.

ving Band Makers—Leather.

—Courroies de Transmission—Cuir.

G.—Maschinenriemen—Leder.

t Co., 36, Tanner-street, Bermondsey,
 a. S.E.



Driving Band Makers—Leather—contd..

Angus, G. & Co., 187, Upper Thames-street,
 London, E.C.
 Ashton, T. A., 36, 40, & 42, Norfolk-st., Sheffield.
 BARR, ROBT. (Agent for Oldfield & Walton),
 94, East India Dock-road, London, E. Patent
 link leather and plain belting makers.
 BINNEY & SON, 62, Queen Victoria-st., E.C.;
 & Catherine-st., City-road, London, E.C.; 22,
 Wellington-street, Leeds; 50, West Howard-
 street, Glasgow; and 63, Broad-st., B'ham.
 Boyce, C. J. & Co., 32, St. Mary Axe, London,
 E.C.
 Bull, E., 89, Shoreditch High-st., London, E.
 Burt, J. & Co., 70 & 71, Bishopsgate-st. Within,
 London, E.C.
 Carpenter Bros., 44, Wellington-st., London, S.E.
 Clarke, J., 16, Major-road, London, S.E.
 Cobbett, W. W., 60, Queen Victoria-st., London,
 E.C.
 Colley, Francis & Son, 86, Market-place, Sheffield.
 Corcoran, Witt & Co., 30, Mark-lane, London,
 E.C.
 Duncan Bros., 32, Queen Victoria-st., London,
 E.C.
 Edwards, C. J. & Son, 32, Great Sutton-st.,
 Clerkenwell, London, E.C.
 Farr, Richard, 312, King's-rd., Chelsea, London,
 S.W.
 Faulkner, Alfred, 50, Moor-st., Birmingham.
 Fenner, J. H. & C., Chapel-lane, Hull.
 Fleming, Thos., Sons & Co., West Grove Mill,
 Halifax.
 Franklin, H. & Co., 78, Gedling-st., Dockhead,
 London, S.E.
 French, J. & Co., 71 & 73, Commercial-street,
 London, E.
 Gibb, James & Co., 23, St. Mary Axe, London,
 E.C.
 Goodall, A. & Sons, Brighouse, Yorkshire.
 Goodwin, Wm. & Co., 36, Primrose-st., Bishops-
 gate, London, E.C.
 Hanson, Scott & Co., Croft Hemp & Flax Mills,
 Stockport; warehouse, 64, George-street,
 Manchester.
 Harbord, Henry, Millstream-road, Dockhead,
 London, S.E.
 Henderson, H. and Sons, 63, Bishopsgate-street
 Within, London, E.C.
 Hepburn & Gale, 239, Long-lane, Southwark,
 London, S.E. *See index to advertisers.*
 Holgate & Co., 33, Great Dover-st., London, S.E.
 Hughes, J. & Sons, 217, Gt. Dover-st., London,
 S.E.
 Jamaiker Bros., 54, Church-street, Minories,
 London, E.
 Lancashire Patent Belting and Hose Co., Wire
 Works Mill, Strangeways, Manchester.
 Macintosh Charles & Co., Cambridge-st., Man-
 chester.
 M'Intosh, P. & Sons, 23, St. Mary Axe, London,
 E.C.
 Mason, Daniel & Sons, 141 & 142, Bath-row,
 Holloway-head, Birmingham.

Driving Band Makers—Leather—contd.

- MORGAN, ROBERT & SON, 213 & 217, Blackfriars-road, S.E.; warehouse, 13, Charles-street, London, S.E.
- Moseley, D. & Sons, Chapelfield Works, Ardwick, Manchester.
- NOBES, HOMAN & HUNT, 75, Rockingham-st, Newington-causeway, London, S.E. *See index to advertisers.*
- Norris, S. E. & Co., 56, 57 & 58, High-street, & St. Paul's Works, Shadwell, London, E.
- OKES, J. C. R., 39, QUEEN VICTORIA ST., LONDON, E.C. THE "VICTORIA" LEATHER BELTING FLEXIBLE, STRONG, AND OF EVEN QUALITY. WROUGHT IRON PULLEYS, &c.
- Oldfield, W. & Walton, 38, Charlotte-lane, Glasgow.
- Orme, Fredk. & Co., 9, St. Andrew's-street, Holborn-viaduct, London, E.C.
- Ormerod, O. & W., 70 & 71, Bishopsgate-st. Within, London, E.C.
- Patent Anhydrous Leather Co., Portsmouth.
- Phillips, Chas. D., Emlyn Works, Newport, Mon.
- Potier, Wm. & Son, 33, Green-st., Wellington-st., Blackfriars-road, London, S.E.
- Richardson, E. & J., Elswick Leather Works, Elswick.
- Rimington Bros., Carlisle.
- Ross, Alex. & Co., Grange Mills, Grange-rd., London, S.E.
- Rowbottom, F., works, Moor Mill, New Mill, near Stockport.
- SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., & Lambeth-hill, London, E.C. American Pure White Oak Tanned. *See index to advertisers.*
- SHEATH BROS., 89, City-road, London, E.C. *See index to advertisers.*
- Staynes & Sons, 60 & 62, High-street, Leicester.
- Stevens, Pellatt & Co., 57, Lant-st., London, S.E.
- Thornton, Currie & Co., 43, 45 & 47, Jamaica-st., Glasgow.
- Tuck & Co., Ltd., 116, Cannon-st., London, E.C.
- Tullis, John & Sons, St. Ann's Leather Works, Glasgow.
- Tullis, Thomas L. & Co., Europa Leather Works, Bridgeton, Glasgow.
- Webb & Sons, Combs Tannery, Stowmarket.
- White, John H. & Co., 12, Burdett-rd., London, E.
- White, John & Sons, Park-row Leather Works, Bingley, Yorkshire.
- Whitehead, R. R. & Bros., 10, Endell-street, London, W.C.
- Whiteley, Joshua, 2, King William-street, London, E.C. (J. Abercrombie, agent).
- Willeox, Mark, Sowerby Bridge, Yorkshire.
- Wild, Augustus & Co., 51, Gt. Dover-street, London, S.E.
- WILCOX, W. H. & CO., 36, Southwark-street, London, S.E.
- Witty & Wyatt, Billiter House, Billiter-st., E.C.

*** Dynamo Machines for Electro-Pl (Manufacturers of).**

- F.—Machines dynamo pour galvanoplast*
- G.—Dynamo-Maschinen für galvanoplast*
- Apps, A., 433, Strand, London, W.C.
- BERLY, J. A., 16, New Bridge-st., L E.C. The "Mather" Dynamo, for and electroplating. *See index to advertisers.*
- Carlyle, W. A., 91 & 92, Constitution Birmingham. *See index to advertisers.*
- Edmunds, Henry, 2, Victoria Mansions, Vi street, Westminster, London, S.W. *page of advertisements.*
- Gülcher Electric Light & Power Co., L 4, Coleman-street, London, E.C.; Battersea Foundry, London, S.W.
- HENLEY'S, W. T. TELEGRAPH W CO., LIMITED; offices, 8, Drapers'-g London, E.C.
- Mather & Platt, Salford Iron Works, Manc
- METROPOLITAN (BRUSH) ELEA LIGHT & POWER COMPANY, LIM 110, Cannon-st., London, E.C.
- Opperman Brothers, Brewhouse-yard, 1 John's-street, London, E.C.
- Spence, J. Berger & Co., 31, Lombard London, E.C. *See index to advertisers.*
- Walker, Sidney F. & Oliver, 195, Severn Cardiff, and at Nottingham.
- WOLVERHAMPTON ELECTRIC LI STORAGE & ENGINEERING CO. (T Parker & P. Bedford Elwell), Comm road, Wolverhampton.
- Woodhouse & Rawson, 11, Queen Victo London, E.C.

Dynamo Magneto and Electric Ma Manufacturers.

- F.—Machines dynamo et magneto électrig*
- G.—Dynamo-Maschinen.*
- Apps, A., 433, Strand, London, W.C.
- BERLY, J. A., C.E., A.S.T.E., &c., 16 Bridge-st., London, E.C. Agent for G Patent. *See index to advertisers.*
- Binswanger, G. & Co., 29, Alderma London, E.C.
- Blakey, Emmott & Co., Northern Tel Works, Halifax, 55 and 56, Southas buildings, Chancery-lane, London, W.C. *index to advertisers.*
- British Electric Light Co., Limited; offi works, Turk's Head-yard, Turnmill-London, E.C. (Gramme Machines, Brockie Arc Lamp "British" Incandescent Lamps.)
- Bromfield, J. Coley, 49, Selborne-road, Sussex.
- Carlyle, W. A., 91 and 92, Constitution Birmingham.
- Chadburn & Son, Telegraph Works, Wa road, Liverpool.
- Chamberlain & Hookham, 4, New Barthol street, Birmingham.

o Magneto and Electric Machine Manufacturers—continued.

(L.) MUIRHEAD & CO., 23, Regency-stminster, London, S.W. (Lontinsystem.)
 TON, R. E. & CO., 4, Queen Victoria-London, E.C. (Bürgin system.)
 ISS & CO., 72, New Briggate, Leeds.
 & Swan United Electric Light Co., rd, 74, Coleman-street, London, E.C.
 s, Henry, 2, Victoria Mansions, Vic-street, Westminster, London, S.W. *See* *ge of advertisements.*
 Lighting Supply & Fitting Co., Limited; k works, 28, York-street, Westminster, n, S.W.
 Dynamic Co. of Philadelphia (C. R. general agent), Archway-house, Bush-London, E.C.
 W., 91, Blackfriars-road, London, S.E.
 NSTONE-VINCENT ELECTRIC DY-) MACHINE, 79½, Gracechurch-street, n, E.C.
 & Co. (F. R. Francis, C.E., Manager), Telegraph Works, Hatton Garden, n, E.C., & Lawford-rd., London, N.W.
 & Co., Saah-ct., Wilson-st., Finsbury, *See index to advertisers.*
 ..A., 30, Finsbury-pymnt., London, E.C.
 Electric Light & Power Co., 4, Cole-treet, London, E.C.; works, Battersea ry, London, S.W.
 Y'S W. T. TELEGRAPH WORKS, LIMITED; offices, 8, Drapers'-gardens, n, E.C.
 on, Dr. John, F.R.S., 4, Westminster-ers, London, S.W.
 bber, Gutta Percha Telegraph Works, amnon-st., London, E.C.
 ury F., C.E., 9, Tower-chambers, Moor-reet, London, E.C.
 LLAN, 3, Camden Cottages, Camden N.W.
 ARMAND, electrical sundriesman, 252, ll-rd., London, E.C., and 42, Rue de oeck, Brussels. Importer of foreign ictures. Second-hand machines always hand.
 R & PLATT, Salford Ironworks, Man-
 POLITAN (BRUSH) ELECTRIC T AND POWER COMPANY, LD., amnon-street, London, E.C.
 JANN BROS., Brewhouse-yard, 172, un's-street, London, E.C. *See index to vers.*
 SON & COOPER, 76, Little Britain, 1, E.C. *See index to advertisers.*
 t Son, 529, King's-rd., Chelsea, London,
 N," "JOEL," & GENERAL ELEC- LIGHT CO., LIMITED, St. Stephen's-ers, Telegraph-street, Moorgate-street, 1, E.C.
 s., 12, Wharf-rd., City-rd., London, N.

Dynamo Magneto and Electric Machine Manufacturers—continued.

Schoth, G. A., 232, Euston-road, London, N.W.
 Sennett, A. R., Electrical Engineering Works, Hatton-garden, London, E.C.
 Siemens Bros. & Co., Limited, 12, Queen Anne's-gate, Westminster, London, S.W. (Siemens' continuous and alternating systems.)
 Snell & Glendenning, St. Paul's-buildings, 21, Paternoster-row, London, E.C. *See index to advertisers.*
 Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*
 Varley Patents Proprietary Co., Limited, Mild-may-park Works, London, N.
 Wailos, (George & Co., 258, Euston-road, N.W.
 Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.
 Weedon & Irish, 30, Borough-rd., Sunderland.
 WOODHOUSE & RAWSON, 11, Queen Victoria-street, London, E.C. *See index to adver-tisers.*

Earthenware Manufacturers.

(For Electrical Purposes).

F.—Appareils en grès.

G.—Tonwaaren-Fabrikanten.

ASHWORTH, G. L., & BROS., Broad-st., Hanley, Stafford. *See index to advertisers.*
 Bailey, J. & Sons, 28, Market-st., Tamworth, Stafford.
 Bodley, E. F. & Son, Scotia Works, Burslem.
 BRAYNE, F. & CO., Bow Pottery, Three Mills-lane, Bromley-by-Bow, London, E.
 Calvert & Lovatt, Langley Mill, Nottingham.
 Crystal Porcelain Co., 23, St. Swithin's-lane, London, E.C. *See index to advertisers.*
 Derby Crown Porcelain Co., Limited, 27, Ely-place, London, E.C.
 Dooley, T. C., Woodville.
 DOULTON & CO. (late Pinder, Bourne & Co.), Waltham-buildings, Holborn-circus, E.C.
 Works—Burslem, Staffordshire. Manufac-turers of Insulators, Battery Jars, Plates, Porous Cells, and all Telegraphic and Electric Appliances in Earthenware.
 Fielding & Co., Stoke-on-Trent.
 Gildea & Walker, Dale Hall, Burslem.
 Grove & Stark, Palissy Works, Longton, Stafford.
 Kirkham, W., London-road, Stoke-on-Trent.
 LEWIS, J. SLATER, 28, Hamilton-street, Birkenhead. Works, Helsby.
 Maling, C. T., Ford Pottery, Newcastle-on-Tyne.
 London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C. *See index to advertisers.*
 Marsh & Co., 18, New Bridge-st., London, E.C.
See index to advertisers.
 Plant, J., Registry-st. Works, Stoke-on-Tront.
 Poole & Son, John-st., Stoke-on-Trent.
 PRICE, SONS & CO., The Old Stoneware Potteries, Bristol. *See index to advertisers.*

Earthenware Manufacturers—continued.

- TAYLOR TUNNICLIFF & CO., Eastwood, Hanley. London agent, Edwin Fox, 9, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*
- Wedgwood, Josiah & Sons, Etruria, Stoke-upon-Trent.
- WOOD, WILLIAM & CO., Albert-st. Works, Burslem.
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.
- Wright, E., Wheat Bridge Pottery, New Brampton, Chesterfield.

Ebonite Manufacturers.

F.—Ebonite (Fab. d').

G.—Ebonite-Fabrikanten.

- Baughan, W. H. & Co., Charlbury, Oxon.
- Binswanger, G. & CO., 29, Aldermanbury, London, E.C.
- Britannia Rubber & Kamptulicon Company, 32, Cannon-st., London, E.C.
- Clegg & Shaw, 10A, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers.*
- Davis & Timmins, Bowling-green-lane, Farringdon-road, London, E.C.
- Fearn, Francis H. & Co., Trafalgar Works, Old Kent-road, London, S.E.
- FRANKS, ROBINSON & CO., 76, Milton-st., Fore-st., London, E.C. Turners of electrical small work in vulcanite, ebonite, ivory, &c. *See index to advertisers.*
- HARBURG INDIA RUBBER CO., 138, London Wall, London, E.C.
- LEVY, ARMAND, electrical sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ruysbreck, Brussels. Sheet rod tube, and any class of mouldings, telephone cases, &c.
- MOSSES & MITCHELL, 68, 69, 70 & 71, Chiswell-street, London, E.C.
- New York Hamburg India Rubber Co., Coleman-st., London, E.C.
- Sheath Bros., 89, City-road, London, E.C. *See index to advertisers.*
- WINTER, F., 138, London Wall, London, E.C. *See index to advertisers.*
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Sheet & Rod in stock.

Electric Alarms—Burglars, Fire, Safes, Ships, Trains, &c.

F.—Avertisseurs électriques, voleurs, feu, &c.

G.—Electrische Alarm-Apparate.

- Apps, A., 433, Strand, London, W.C.
- Baughan, W. H. & Co., Charlbury, Oxon.
- Berry, F. H., 8, Percival-st., Clerkenwell, London, E.C. *See index to advertisers.*
- BLAKEY, EMMOTT & CO., Northern Telegraph Works, Halifax, 55 & 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
- BLAND, J. H. & Co., 75, Blackfriars-road, S.E., and 27, Kirby-st., Hatton-garden, London, E.C.

Electric Alarms—Burglars, Fire, Ships, Trains, &c.—continued

- BLEWS, WILLIAM (Estab. 1782), 1, New Bartholomew-st., Birmingham
- Moltshanoff, Negliany, Moscow, and 3 Smithfield, London, E.C. Contractor Cities of Moscow, Mexico, San Pa Gas Companies.
- BRYDEN, JOHN & SONS, 2, Bala Cavendish-sq., W.; and 90, Gloucester South Kensington, London, S.W.; also Frederick-st, Edinburgh; 24, Renfield Glasgow; 7, Princes-street, Perth; Commercial street, Dundee. *See index to advertisers.*
- BURLEY, WILLIAM, Tower-chamberdon Wall, London, E.C.
- DALE, H. & E. J., 4, Little Britain, 26, Ludgate-hill, London, E.C. *See advertisers.*
- Francis & Co. (F. R. Francis, C.E., M. Eagle Telegraph Works, Hatton Garden & Lawford-road, London, N.W.
- FOULGER, CHARLES, 56, Wapping, pool. Electric bells with Foulger's indicators.
- Garnham & Co., Sash-court, Wilton London, E.C. *See index to advertisers.*
- Gent, J. T. & Co., Faraday Works Richard's-road, Leicester. *See index to advertisers.*
- Goold, G. D. & Co., 27, Broomsway Wandsworth-common, London, S.W.
- GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W. Works: Reading. *See advertisers.*
- Kelso & Co., 43, Union-street, Glasgow.
- KING & CO., Western Electric Narrow Wine-street, Bristol.
- Koerber, J. A., 44, Frith-st., Soho-sq London, W.
- REID BROS., 12, Wharf-road, City London, N. *See index to advertisers.*
- SAX, JULIUS, 108, Great Russell Bloomsbury, W.C. & Bedford-telegraph Store-street, Bedford-square, London.
- SIGNAL ENGINEERING CO., 181, Holborn, London, W.C.
- SHIPPEY BROS. & CO., 13 & 14, King Cheapside, London, E.C. *See index to advertisers.*
- Snell & Glendening, St. Paul's-buildings Paternoster-row, London, E.C. *See advertisers.*
- Sugg, William & Co., Limited, Vincent London, W.
- THURKLE & CO., 5, Denmark-st London, W.
- Vulcan Manufacturing Co., Vulcan Rocliffe-street, City Garden-row, London. *See index to advertisers.*
- Walker, Sidney F. & Oliver, 195, Seven Cardiff, and at Nottingham.
- Weedon & Irish, 30, Borough-road, Sun Western Electric Co., 59, Moorgate London, E.C.

Apparatus for Lighting Gas.

appareils électriques pour allumer le gaz.
ische Apparate zum Anzünden des Gases.

433, Strand, London, W.C.
r, G. & Co., 29, Aldermanbury,
E.C.

W. H. & Co., Charlbury, Oxon.

WILLIAM & SONS (Estab. 1782) 9
New Bartholomew-st., Birmingham.
oltshanoff, Negliuny, Moscow, and 38,
mithfield, London, E.C. Contractors
ities of Moscow, Mexico, San Paulo,
Companies.

haw, 10A, Victoria-buildings, Victoria-
ichester.

& E. J., 4, Little Britain, E.C., &
gate-hill, London, E.C.

Appliance Co., Trafalgar-buildings,
Cross, S.W.

as Lighting Co., Limited, Clegg-court,
street, Salford, Manchester.

Co. (F. R. Francis, C.E., Manager),
Telegraph Works, Hatton Garden, E.C.,
ord-road, London, N.W.

L ELECTRIC APPARATUS COM-
29, Aldermanbury, London, E.C.

J. A., 44, Frith-st., Soho-square,
W.

LD, J. T., 41, Queen Victoria-street,
E.C. Batteries of all kinds, Zinc
Rods, Cylinders, Nickel Anodes, &
Plating Outfits to suit every requirement.

LIUS, 108, Great Russell-street,
ury, W.C., & Bedford Telegraph Works,
reet, Bedford-square, London, W.C.

ENGINEERING CO., 181, High
t, London, W.C.

eo. (Clarke's System), 3, Wigmore-st.,
sh-sq., London, W.

Co., 48, Osnaburgh-st., London, N.W.
lliam & Co., Limited, Vincent Works,
W.

idney F. & Oliver, 195, Severn-road,
and at Nottingham.

Electric Co., 57, Moorgate-street,
E.C.

OUSE & RAWSON, 11, Queen Vic-
et, London, E.C.

Bell Fitters and Contractors.

Sonneries électriques (Poseurs de).

Electrische Glocken—Einrichter.

S. & Son, 66, Swanswell-st., Coventry.
433, Strand, London, W.C.

. & F., Church Gate, East Retford.

& Sons, 28 & 29, Market-st., Tamworth,
L.

H. & Co., 75, Blackfriars-road, S.E.;
Kirby-street, Hatton-garden, London,

Electric Bell Fitters & Contractors—contd.

BLEWS, WILLIAM & SONS (Estab. 1782), 9
to 15, New Bartholomew-st., Birmingham,
Dom Moltshanoff, Negliuny, Moscow, and 38,
West Smithfield, London, E.C. Contractors
to the Cities of Moscow, Mexico, San Paulo,
&c. Gas Companies.

Brailsford, T. R., Thames Conservancy, 41,
Trinity-square, London, E.C.

BRYDEN, JOHN & SONS, 2, Bulstrode-st.,
(corner of Welbeck-st.), Cavendish-square,
W.; and 90, Gloucester-road, South Kensin-
ton, London, S.W.; and at 16, Frederick-st.,
Edinburgh; 24, Renfield-st., Glasgow; 7,
Princes-st., Perth; Commercial-st., Dundee.
(Established 1809.) *See index to advertisers.*

BURLEY, WM., Tower-chambers, London-
wall, London, E.C.

Capham, Chas., 20, Clarges-st, Piccadilly,
London, W.

Clarke, Arthur, 30, Watling-street, London, E.C.
Coe & Smith, 11, Denmark-st., Soho, London, W.C.
Cubley & Preston, 4, High-street, Sheffield.

CUTTING, R. C. & Co., Wardrobe-chambers,
Queen Victoria-st., London, E.C.

Dale, H. & E. J., 4, Little Britain, E.C.; and
26, Ludgate-hill, London, E.C.

Davis, G. F., 185, Vauxhall-bridge-road,
London, S.W.

Davis, J. & Son, All Saints' Works, Derby.

DEFRIES, J., & SONS, 147, Houndsditch,
London, E. *See index to advertisers.*

Denny, Robert, 131, Oxford-st., Glasgow.

Durham, George, 8, Victoria-st., Shaw Heath,
Stockport.

Edmundson, J. & Co., 19, Great George-st., Lon-
don, S.W.

Fenn, Wm. Th., 5, North-st., Sloane-st.,
London, S.W.

Francis & Co. (F. R. Francis, C.E., Manager),
Eagle Telegraph Works, Hatton-garden, Lon-
don, E.C., & Lawford-road, London, N.W.

Gent, J. T., & Co., Faraday Works, King
Richard's-rd., Leicester. *See index to advertisers.*

Glanville, C. & G., 6, Exeter-row, Birmingham.
Goold, G. D. & Co., 27, Broomswood-road,
Wandsworth Common, S.W.

GRIFFITH & CO., 4, Queen Anne's-gate,
London, S.W. Works: Reading. *See index
to advertisers.*

HAMILTON, R. & SON, 44, Conway-st.,
Birkenhead.

Hancock, William, 22, Stratford-rd., London, W.
Harmer, C. & Son, 11, Lingfield-rd., Wimbledon.
Harrow & Co., 13 & 14, Portland-st., Soho, Lon-
don, W.

Hoskins & Redford, 34, Bridlesmith-gate, Not-
tingham.

Kelso & Co., 43, Union-st., Glasgow.

Koerber, J. A., 44, Frith-st., Soho-sq., London,
W.

New & Co., 44, Dean-st., Soho, London, W.

NEWNHAM, F., 21, Compton-st., Goswell-
road, London, E.C.

Electric Bell Fitters & Contractors—contd.

Northam, John, & Co., Limited, 30, Norfolk-st., Sheffield.
 ORME & CO., 65, Barbican, London, E.C.
 PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*
 Scott, Ronald A., 6, Pomona-pl., Fulham, London, S.W.
 SIGNAL ENGINEERING CO., 181, High Holborn, London, W.C.
 Snell & Glendening, St. Paul's-bdgs., 21, Paternoster-row, London, E.C.
 Spence, J. Berger, & Co., 31, Lombard-street, London, E.C.
 Sugg, William & Co., Vincent Works, Vincent-st., Westminster, London, W.
 TAYLOR, E., Heaton-lane, Stockport, near Manchester.
 THURKLE & CO., 5, Denmark-st., Soho, London, W.
 Walker, S. F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.
 Weedon & Irish, 30, Borough-rd., Sunderland.
 Zimdars, C. E., 327, Gray's-Inn-rd., London, W.C.

Electric Bell Fittings Makers—China.

F.—

G.—

Taylor, Tunncliffe & Co., manufacturers of china roses and pushes for electric bells, also speciality in china and stone for electric lighting purposes, Eastwood, Hanley; E. Fox, London agent, 9, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*

Electric Bell Manufacturers.

F.—Sonneries électriques (Fab. de).

G.—Electrische Glocken-Fabrikanten.

Adam & Son, 57, Haymarket, London, S.W.
 ANDERSON & MUNRO, 136, Bothwell-street, Glasgow.
 Apps, A., 433, Strand, London, W.C.
 Archbutt, J. & W. E., 8, Bridge-street, London, S.W.
 ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.
 Ashby, Geo. F., 165, King's-road, Chelsea, London, S.W.
 Bailey, W. H. & Co., Essex-st., Salford, Manchester.
 Barrett & Leggott, Market-st., Bradford.
 Bassano & Slater, Traffic-st., Derby.
 BAUGHAN, W. H. & Co., Charlbury, Oxon. To the trade complete or in parts finished or rough.
 Beaumont & Dougill, 36, Gt. George-st., Leeds.
 Becker, F. E. & Co., 34, Maiden-lane, Coventry-garden, London, W.C.
 BERRY, F. H., 18, Percival-st., London, E.C. *See index to advertisers.*
 Binswanger, G., & Co., Aldermanbury, London, E.C. Makers of the Patent Portable Silver Battery.

Electric Bell Manufacturers—contd.

Blackwell, George G., 26, Chapel-st., L.
 BLAKEY, EMMOTT & CO., Northern graph Works, Halifax, 55 & 56, South buildings, Chancery-lane, London, W. *See index to advertisers.*
 Bland, J. H. & Co., 75, Blackfriars-rondon, S.E., and 27, Kirby-street, garden, London, E.C.
 Blenkarn, W., 82, Ferndale-rd., London, S.W.
 BLEWS, WILLIAM & SONS, 9 to 1 Bartholomew-st., Birmingham; Donhamoff, Neglinny, Moscow, and 3 Smithfield, London, E.C. Contractors Cities of Moscow, Mexico, San Pa Gas Companies. (Established 1782).
 Bloomfield, Henry, King-st., Maidenhead.
 Botten, John J., 46, City-rd., London, I
 British Insulite Co., Limited, 30, Cole London, E.C. Works: Charlton, Ke
 BRYDEN, JOHN & SONS, 2, Bals and 90, Gloucester-rd., South Kensigdon, S.W. (corner of Welbeck-st.), Casquare, London, W., also at 16, Fred Edinburgh; 24, Renfield-st., Glas Princes-st., Perth; Commercial-st., Established 1809. *See index to advert*
 BURLEY, WILLIAM, Tower-chamberdon-wall, London, E.C.
 Caldwell, Edward, Shakespeare-st., Net
 Chadburn & Son, Telegraph Works, V road, Liverpool.
 Challis Bros., 4, Orchard-buildings, A London, E.
 Ching, Comyn & Co., 54 & 58, Cast Long-acre, London, W.C.
 Christiani & Company, 11, Queen Vie London, E.C.
 Christie, John C., 3 & 5, Mansell-st., L
 CLARK (LATIMER), MUIRHEAD 23 to 31, Regency-st., London, S.W.
 Clark & Company, 17, Turreen-st., Gla
 Cole, John R., 61, Freeman-st., Great Lincolnshire.
 DALE, H. & E. J., 4, Little Britain, E.C. & 26, Ludgate-hill, E.C. Dale's Base Bell. Dale's New British Indic *index to advertisers.*
 Davis, J. & Son, All Saints' Works, De
 Davis, G. F., 185, Vauxhall-bridge-rondon, S.W.
 DEFRIES, J. & SONS, 147, Houndsditchon, E. *See index to advertisers.*
 Edinburgh & Birmingham Brass Fou 10, St. James'-square, Edinburgh.
 Edmundson, J. & Co., 19, Great George-don, S.W.
 Eidsforth & Mudford, Jackson-rd., I London, N. *See index to advertisers.*
 Electric Appliance Co. (The), Trafalgar Charing-cross, London, S.W.

Bell Manufacturers—continued.

Magnetic Appliance Stores (J. Hintze, manager), 21, Liverpool-street, London, E.C. Works: Eagle Wharf-road, N. See index to advertisers.

Mark & Co., 9, Clifford-st., London, W., 8, Charles-st., Newport, Mon.

Co. (F. R. Francis, C.E., Manager), Telegraph Works, Hatton-garden, London, N.W. arle, 22, Pigott-st., London, E.

& Co., Sash-court, Finsbury, London, See index to advertisers.

Electric Apparatus Company, 29, Alder-y, London, E.C.

T. & Co., Faraday Works, King's-rd., Leicester. See index to adver-

& Son, 70, Atlantic-road, Brixton, S.W.

D. & G., 267, Sauchiehall-st., Glasgow. John W. & Son, 115, Leadenhall-st., E.C.

H & CO., 4, Queen Anne's-gate, London, W. Works: Reading. See index to rs.

Wm., 89, Bolsover-st., Fitzroy-sq., W.

Company, 6, Sloane-st., London, S.W. vard, 39, Westmoreland-place, City-ondon, N. See index to advertisers.

e & Company, 41, George-st., Euston-ion, N.W.

L. J., 61, Sandgate-rd., Folkestone.

Co., High-st., Mortlake, London, S.W. enry, Watergate, Grantham.

lk., 50, Kenton-st., Brunswick-square, W.C.

James & Company, 121, Wardour-st., W.

t CO., 43, Union-street, Glasgow.

CO., Western Electric Works, Narrow-reet, Bristol.

J. A., 44, Frith-street, Soho-square, W.

ARMAND, Electrical Sundriesman, all systems, Indicators, Batteries, &c., swell-road, London, E.C.; & 42, Rue sbroëck, Brussels. The whole of the es necessary to the fitting up of houses classes of electrical work kept. Skills kept to take charge of all classes of work for trade only. See index to rs.

. C. & Son, 1, Lowndes-terrace, urchase, London, S.W.

Thos.T., 102, Fetter-lane, London, E.C.

as. & Co., 17, Hope-street, Glasgow.

& Swan, 13 & 15, Moseley-street, ile.

Electric Bell Manufacturers—continued.

MAYFIELD, J. T., 41, Queen Victoria-st., London, E.C. Manufacturer & Fitter of Electric Bells, Trembling, Single Stroke, Continuous Action, Portable Bells in Case, especially useful for Invalids, Indicators, Batteries, Wires, Pushes or Press Buttons, and other Signalling Appliances.

Medland, J. B., 12, Borough High-st., London, S.E.

Mellish, Septimus, 68½ Leadenhall-st., London, E.C.

New & Co., 44, Dean-street, Soho, London, W.

PATERSON & COOPER, 76, Little Britain, London, E.C. See index to advertisers.

Paterson, W. & Son, 83, Pitt-street, Glasgow.

Phillips, John, 4, Glebe-street, Penarth, Cardiff.

Pickett, Thos., 14, St. George's-terrace, Kilburn, London, N.W.

Purcell & Nobbs, 89, Cleveland-st., Fitzroy-square, London, W.

Purser, G. & W., 182, Upper Thames-st., London, E.C.

Radcliffe, A. H. W., 5, Carrs-lane, High-street, Birmingham.

Sanderson & Co., Leadenhall-house, 101, Leadenhall-st., London, E.C.

Saul, David, H., 44, Barbican, London, E.C.

SAX, JULIUS, 108, Great Russell-street, Bloomsbury, London, W.C., and Bedford Telegraph Works, Store-street, Bedford-square, London, W.C.

Schoth, G. A., 232, Euston-road, London, N.W.

Scott, Ronald A., 6, Pomona-place, London, S.W.

SIGNAL ENGINEERING CO., 181, High Holborn, London, W.C. See index to advertisers.

Smith, J. & Sons, 18, 23 & 24, St. John's-square, London, E.C.

Smith & Stevens, 48, Leicester-square, London, W.C.

Spark, Alex., 187, George-street, Aberdeen.

Spence, J. Berger & Co., 31, Lombard-street, London, E.C. See index to advertisers.

Stevens, F. A., 17, Duke-street, London, E.C.

Strode & Co., 48, Osnaburgh-street, London, N.W.

Sutcliffe, J. L., 153, South-st., Moor, Sheffield.

Thorpe, Harry, 55, Theobald-road, London, W.C.

THURKLE & CO., 5, Denmark-street, Soho, London, W. See index to advertisers.

VULCAN MANUFACTURING CO., Vulcan Works, Rocliffe-st., City-garden-row, London, N. See index to advertisers.

Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.

Western Electric Co., 59, Moorgate-street, London, E.C.

Weston, G., 92, Mile-end-road, London, E.

Whalley, A., 71, Fliming-square, Blackburn.

Whittaker, P. & Co., 9, Parr-street, Liverpool.

Young & Buss, 18, Blandford-st., London, W.

Zimdars, C. E., 327, Gray's-inn-road, London, W.C.

Electric Clocks & Electric Synchronization.*F.—Horloges électriques et synchronisation.**G.—Elektrische Uhren und Zeitmesser.*

- Apps, A., 433, London, Strand, W.C.
 Barraud & Lund, 41, Cornhill, London, E.C.
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C.
 COMPAGNIE GENERALE DES HORLOGES PNEUMATIQUES DE PARIS.—Porr & Resch Patent System.—The correct time distributed to any number of public and private clocks in a town, or all the clocks periodically synchronized by means of the PNEUMATIC system, as in use in the public thoroughfares and private houses of Paris. All the working parts of the machinery and apparatus at the Central and Distributing Stations automatically and electrically controlled. A yearly rental charged at a very moderate figure. Agent for Great Britain, J. A. BERLY, C.E., A.S.T.E. & E., 16, New Bridge-st., London, E.C. *See index to advertisers.*
 Edward, G. & Sons, 92, Buchanan-st., Glasgow.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, 89, Hatton-garden, E.C., & Lawford-road, London, N.W.
 GRIFFITH & CO., 4, Queen-Anne's-gate, London, S.W. Works: Reading.
 Groves, W., 89, Bolsover-st., Fitzroy-square, London, W. W. A. Stroh's Magnetic Clocks.
 Koerber, J. A., 44, Frith-st., Soho-square, London, W.
 Lund & Blockley, 42, Pall-mall, London, S.W.
 Mason Bros. & Co., 17, Hope-street, Glasgow.
 Reid Bros., 12, Wharf-road, City-road, London, N.
 Sugg, William & Co., Limited, Vincent Works, London, S.W.
 Sutcliffe, J. L., 153, South-st., Moor, Sheffield.
 Vulcan Manufacturing Co., Vulcan Works, Rocliffe-street, City Garden-row, London, N.
 Whalley, A., 71, Fleming-square, Blackburn.

Electric Lamp Manufacturers—Arc.*F.—Lampes électriques à Arc (Fab. de).**G.—Elektrische Lampen—Arc.*

- Anglo-American Brush Electric Light Corporation, Limited, 108, Belvedere-road, Lambeth, London, S.E. (Brush system.)
 Apps, A., 433, Strand, London, W.C.
 BERLY, J. A., C.E., A.S.T.E., &c., 16, New Bridge-st., London, E.C. Agent for Hajnis (of Prague) Patent Arc Lamp, and Mondos Patent Arc Lamp, &c. *See index to advertisers.*
 BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Don Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

Electric Lamp Manufs.—Arc—

- BRITISH ELECTRIC LIGHT CO., LIM
 Offices and works: Turk's Head-yard, mill-street, London, E.C. Brockie Arc and other Lamps. British Incandescent Chadburn & Son, Telegraph Works, Warrington, Liverpool.
 CLARK, CLARK & BOWMAN, 411, Broad-road, London, S.W. *See index to advertisers.*
 CROMPTON, R. E. & CO., 4, Queen Victoria-st., London, E.C. Crompton system *index to advertisers.*
 CLARK (L.), MUIRHEAD & CO., 2, Agency-st., London, S.W. Andrews' & Dr. Hopkinson's system.
 Dale, H. & E. J., 4, Little Britain, E.C. Ludgate-hill, London, E.C. *See index to advertisers.*
 DEFRIES, J., & SONS, 147, Houndston, London, E. *See index to advertisers.*
 Edmunds, Henry, 2, Victoria Mansions, Victoria-st., London, S.W. *See last page of advertisement.*
 Electric Lighting Supply & Fitting Co., Office and Works: 28, York-street, London, S.W. *See index to advertisers.*
 Electric "Sun" Lamp & Power Co., Ltd., St. Margaret's Offices, Victoria-street, London, S.W.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden & Lawford-road, London, N.W.
 Gulcher Electric Light & Power Co., 4, Colston-street, London, E.C. Works, Barking Foundry, London, S.W.
 Groth, L. A., 30, Finsbury-pavement, London, E.C.
 HENLEY'S, W. T. TELEGRAPH WORKS CO., Limited. Offices: 8, Drapers'-gate, London, E.C.
 Horry, W. S., 19, Bishopsgate-street, London, E.C.
 INTERNATIONAL ELECTRIC CO., 4, Copthall-bldgs, Throgmorton-street, London, E.C.
 Johnson & Phillips, 14, Union-court, Old London-street, London, E.C., and Victoria Charlton, S.E.
 Lever, Charles, Culceth-hall, Bowden, Cheshire.
 LEVY, ARMAND, Electrical Sundries, 252, Goswell-road, London, E.C.; & 4, de Ruysbroeck, Brussels. Agent for the Cance, Lachausse, and other lamps. Standard lamps always on hand. Construct any system for the trade.
 Main, W., 34, Geneva-rd., Brixton, London.
 METROPOLITAN (BRUSH) ELECTRIC LIGHT & POWER CO., LIMITED, Cannon-st., London, E.C.
 OPPERMANN BROS., Brewhouse-yard, St. John-st., London, E.C. *See index to advertisers.*
 PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*

Lamp Manufrs.—Arc—continued.

& Son, 529, King's-road, Chelsea, S.W.
 N," "JOEL," & GENERAL ELEC-
 LIGHT CO., LIMITED, St. Stephen's-
 ers, Telegraph-st., London, E.C. *See*
advertisers.
 ROS., 12, Wharf-road, City-road,
 N.
 A. R., Electrical Engineering Works,
 Garden, London, E.C.
 Bros., 13 & 14, King-st., Cheapside,
 E.C. Sole manufacturers of the
 Arc Lamps, of 50, 100, and 200
 power. *See index to advertisers.*
 Bros. & Co., Ltd., 12, Queen Anne's-
 Westminster, London, S.W. (Siemens'
)
 Glendening, St. Paul's-buildings, 21,
 aster-row, London, E.C.
 F. Berger & Co., 31, Lombard-street,
 E.C.
 os., 14, Finsbury-square, London, E.C.
 Manufacturing Co., Vulcan Works,
 -street, City Garden-row, London, N.
 Sidney F. & Oliver, 195, Severn-road,
 and at Nottingham.
 & Irish, 30, Borough-road, Sunderland.
 F. L., 92, Mile End-road, London, E.
 OUSE & RAWSON, 11, Queen Vic-
 , London, E.C. Models made and
 ents carried out. *See index to advertisers.*

**Electric Lamp Manufacturers—
Incandescent.**

us électriques à Incandescence (Fab. de).
—Electriche Lampen—Glühlicht.
 , 433, Strand, London, W.C.
 LONG, STEVENS & CO., 15,
 ll-street, Birmingham.
 J. A., C.E., A.S.T.E., &c., 16, New
 st., London, E.C. Agent for Nothomb's
 Incandescent Lamp, 10 to 300 Candle
See index to advertisers.
 WILLIAM & SONS, 9, to 15, New
 omew-st., Birmingham; Dom Molts-
 Negliuny, Moscow, and 38, West
 eld, London, E.C. Contractors to the
 of Moscow, Mexico, San Paulo, &c.
 mpanies.
 ERNEST, 33, Northampton-street,
 , E.C. Manufacturer of incandes-
 aps and vacuum tubes.
 I ELECTRIC LIGHT CO., LIMTD.,
 and Works: Turk's Head-yard, Turn-
 eet, London, E.C.
 I. & E. J., 4, Little Britain, E.C.
 Ludgate-hill, London, E.C.
 , Henry, 2, Victoria Mansions, Victoria-
 on, S.W. *See last page of advertisements.*
 on, J. & Co., 19, Gt. George-street,
 , S.W.

**Electric Lamp Manufacturers—
Incandescent—continued.**

Electric Lighting Supply & Fitting Co., Ltd.,
 Office and Works: 28, York-st., London,
 S.W. *See index to advertisers.*
 Francis & Co. (F. R. Francis, C.E., manager),
 Eagle Telegraph Works, Hatton-garden, E.C.,
 and Lawford-road, London, N.W.
 Gülcher Electric Light & Power Co., 4,
 Coleman-street, E.C. Works; Battersea
 Foundry, London, S.W.
 Horry, W. S., 19, Bishopsgate-st.-within,
 London, E.
 METROPOLITAN (BRUSH) ELECTRIC
 LIGHT & POWER CO., LIMITED, 110,
 Cannon-st., London, E.C.
 OPPERMANN BROS., Brewhouse-yard, 172,
 St. John's-st., London, E.C. *See index to ad-
 vertisers.*
 "PILSEN," "JOEL," & GENERAL ELEC-
 TRIC LIGHT CO., LIMITED (THE), St.
 Stephen's-chambers, Telegraph-street, London,
 E.C. *See index to advertisers.*
 Reid Brothers, 12, Wharf-road, City-road,
 London, N.
 Sennett, A. R., Electric Engineering Works,
 Hatton-garden, London, E.C.
 SHIPPEY BROS.:—
 13 & 14, King-street,
 London, E.C. Sole
 Manufacturers of the
 Incandescent Glow Lamp,
 The most Economical and
 Brilliant Lamp. Price
 Lists on application. *See*
index to advertisers.



Siemens Bros. & Co., Limited, 12, Queen Anne's-
 gate, London, S.W. (Swan system.)
 Spence, J. Berger & Co., 31, Lombard-street,
 London, E.C.
 Vulcan Manufacturing Co., Vulcan Works,
 Rochiffe-street, City Garden-row, London, N.
 Wauthier, J., 53, Red Lion-st., London, E.C.
 WOODHOUSE & RAWSON, 11, Queen Victo-
 ria-st., London, E.C. All kinds of lamps
 made to order. Experiments carried out.
 Sole Makers of Woodhouse & Rawson's patent
 incandescent lamps; every variety of E.M.F.
 and candle power, from 1 to 100, kept in stock.
 Specialities in surgical lamps. *See index to*
advertisers.

Electric Launches.

F.—Bateaux électriques.

G.—Electriche Baste.

Binswanger, G. & Co., 29, Aldermanbury,
 London, E.C.
 Bogle, Gilbert & Co., 47, Oswald-st., Glasgow.
 Duncan Brothers, 32, Queen Victoria-st., Lon-
 don, E.C.
 Francis & Co. (F. R. Francis, C.E., manager),
 Eagle Telegraph Works, Hatton Garden, Lon-
 don, E.C., and Lawford-rd., London, N.W.

Electric Launches—continued.

Goold, G. D. & Co., 27, Broomwood Road, Wandsworth-common, London, S.W.
Sennett, A. R., Electrical Engineering Works, Hatton-garden, London, E.C.
Spence, J. Berger & Co., 31, Lombard-street, London, E.C.
Vulcan Manufacturing Co., Vulcan Works, Roccliffe-st., City Garden-row, London, N.
YARROW & CO., ISLE-OF-DOGS, MANCHESTER-ROAD, LONDON, E.

Electric Light Apparatus and Fittings Manufacturers.

F.—Appareils pour la lumière électrique.

G.—Apparate für electrische Beleuchtung.

ANDERSON & MUNRO, 136, Bothwell-st., Glasgow.
Appleby & Stamps, 29, Graham-st., Birmingham.
Applegarth, R., 11, Queen Victoria-st., London, E.C.
Apps, A., 433, Strand, London, W.C.
ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.
Ashbury, W. H., Atlas Works, Grantham.
BARWELL, SON & FISHER, Waltham-bdgs., Holborn-circus, London, E.C. Manufacturing, Worcester Works, Clement-st., Birmingham.
Bayley Bros., Sherborne Works, Sherborne-st., Walsall.
Bemrose & Sons, Derby.
Bennett, Henry, & Co., 131, Hope-st., Glasgow.
BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham, Dom Moltshanoft Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)
British Electric Light Co., Limited. Office and Works: Turk's Head-yd., Turnmill-st., London, E.C.
Carpenter & Ford, Cranmer Works, Bishop-st.-south, Birmingham.
CLARK L., MUIRHEAD & CO., 23, Regency-st., London, S.W.
Consolidated Electric Company, Limited, 110, Cannon-st., E.C.; Factory, 68, Cowcross-st., London, E.C.
CROMPTON, R. E. & CO., 4, Queen Victoria-st., London, E.C.
Dale, H. & E. J., 4, Little Britain, London, E.C., & 26, Ludgate-hill, London, E.C. *See index to advertisers.*
Davis & Timmins, Bowling Green-lane, London, E.C.
DEFRIES, J. & SONS, 147, Houndsditch, London, E. *See index to advertisers.*
Edmunds, Henry, 2, Victoria Mansions, Victoria-st., London, S.W. *See last page of advertisements.*
Edmundson, J. & Co., 19, Gt. George-st., London, S.W.

Electric Light Apparatus and Manufacturers—continued.

Electric Appliance Company, Trafalgaings, Charing-cross, London, W.C.
Electric Light Association, 9, Victoria London, S.W.
ELECTRIC LIGHTING SUPPLY & FCO., LIMITED (Manager, W. Adams). Office and works, York-sdon, S.W. *See index to advertisers.*
ELECTRIC "SUN" LAMP & POW Limited, St. Margaret's Offices, Vict London, S.W.
Electrical Trading Company, 23, Farring London, E.C.
Elliott Bros., 101, St. Martin's-lane, Strand, London, W.C.
Faraday & Son, 3, Berners-st., Oxford-don, W.
Ford, Thos., 86, Emily-st., Birmingham
Gent, J. T. & Co., Faraday Works Richard's-rd., Leicester.
Glover, W. T. & Co. Chief office: 25, st., Manchester. London Office: 28, row, E.C. Glasgow office: 85, Buchan Greenway, G., 48, Llanarth-st., 2 Mon.
Groth, L. A., 30, Finsbury-pavement, E.C.
Gülcher Electric Light & Power Co., Liu Coleman-st., London, E.C. Works: I Foundry, S.W.
Hammond & Co., Zetland-bdgs., Middle Hardman, Powell & Co., King Edwards King Edwards-rd., Birmingham.
Heaton, Ralph & Sons, Icknield-st., Birm
HENLEY'S (W. T.) TELEGRAPH CO., LTD. Offices: 8, Drapers'-gdn don, E.C.
Horton, Edward, 151, Strand, London, 1
Hunt, J. & Co., 35, Snow-hill, Londo Works: Birmingham.
India Rubber, Gutta Percha & Telegrap Company, Limited, 100, Cannon-st., E.C.
INTERNATIONAL ELECTRIC CO., hall-bdgs, London, E.C.
Joel, Henry F., C.E., 9, Tower-chbra., M st., London, E.C.
JOHNSON & PHILLIPS, 14, Union-c Broad-st., London, E.C., & Victoria Charlton, S.E.
JONES & WILLIS, 43, Great Russell-don, W.C.
Jones & Willis, 15 & 16, Temple-row, 1
LAING, WHARTON & DOWN, 8 & born-viaduct, London, E.C.
Légé, Annibal & Co., 75, Turnmill-st., E.C.
LEVY, ARMAND, 252, Goswell-road, E.C.; & 42, Rue de Ruysbreck, Brussels class of fittings, globes for all systems stock, carbon terminals, clamps, hold *See index to advertisers.*

**c Light Apparatus and Fittings
Manufacturers—continued.**

cal Appliance Co., Parliament-st.,
gham.
POLITAN (BRUSH) ELECTRIC
T & POWER CO., LIMITED, 110,
n-st., London, E.C.
Rich., 54, St. Enoch's-sq., Glasgow.
MAN BROS., Brewhouse-yard, 172, St.
-st., London, E.C.
SON & COOPER, 76, Little Britain,
n, E.C. *See index to advertisers.*
IN, JOEL," & GENERAL ELEC-
LIGHT CO., LIMITED, St. Stephen's-
Telegraph-st., London, E.C. *See index*
rtisers.
r Lamp & Lighting Co., Ltd., Lindsley
Worsley, Manchester.
ROS., 12, Wharf-road, City-road, Lon-
[.
on, Ellson & Co. Works: 243½, High
rn, London, W.C.
A. R., Electrical Engineering Works,
-gdn., London, E.C.
Bros. & Co., Limited, 12, Queen Anne's-
London, S.W.
& GLENDENING, St. Paul's-bdgs.,
ternoster-row, London, E.C.
JAS. & SONS, High-st., Lambeth, Lon-
-E.
William & Co. (Limited), Vincent Works,
n, S.W.
Co., Limited, South Benwell, Newcastle-
ne.
Tunnickliff & Co. (China), Eastwood,
f. London agent, Edwin Fox, 9, Bart-
buildings, Holborn-circus, London, E.C.
& Brown, 16 & 17, Kirby-st., Lon-
-E.C.
ros., office and manufactory, Heddon-
gent-st., London, W.
B. & Sons, King-st., Covent-garden,
n, W.C.
Manufacturing Co., Vulcan Works,
e-st., City-garden-row, London, N.
Sidney F. & Oliver, 195, Severn-road,
f, and at Nottingham.
has. A., Etna Works, Lewes, Sussex.
I. J. & Co., 116 & 118, Southwark-
-road, London, S.E.
has. & Co., 41, Holborn-viaduct, Lon-
-E.C.
HOUSE & RAWSON, 11, Queen Vic-
t., London, E.C. *See index to advertisers.*

Electric Light Companies.

Eclairage électrique (Compagnies d')
gesellschaften für elektrische Beleuchtung.
, J. D. F., Woodside Works, South
side-road, Glasgow.
merican (Brush) Electric Light Corpora-
-limited), 108, Belvedere-road, Lambeth,
n, S.E.

Electric Light Companies—continued.

Anglo-Spanish "Brush" Electric Light &
Power Company, Limited, 110, Cannon-st.,
London, E.C.
Atlas Electric Appliances Company, Limited, 2,
Great Winchester-st., London, E.C.
Australasian Electric Light Power and Storage
Company, Limited, 41, Coleman-st., London,
E.C.
British Electric Light Company, Limited, 78,
Turnmill-st., London, E.C. *See index to*
advertisers.
Brush Electric Light and Power Company of
Scotland, Limited, 9, New Broad-st., London,
E.C. (*In liquidation.*)
BRUSH MIDLAND ELECTRIC LIGHT
& POWER CO., LIMITED, 4, Great Win-
chester-st.-buildings, London, E.C.
Eastern Electric Light & Power Co., Limited,
19, Great Winchester-street, London, E.C.
Economic Electric Company, Limited, 9, Soho-
sq., London, W.
Edison's Electric Light Co., Limited, 19, Vic-
toria-buildings, Manchester. Teleph. No. 532.
Edison & Swan United Electric Light Co., Ltd.,
74, Coleman-street, London, E.C.
Edison's Indian and Colonial Electric Company,
Limited, 4 and 6, Throgmorton-avenue, Lon-
don, E.C.
Electric Lighting Contract and Maintenance
Company, Limited, 1, Queen Victoria-street,
London, E.C. (*In liquidation.*)
Electric Sun Lamp and Power Company, Limited,
St. Margaret's Offices, Victoria-st., London,
S.W.
Electrical Power Storage Co., Limited, 4, Great
Winchester-street-buildings, London, E.C.
ELECTRO-MOTIVE FORCE CO., LIMITED,
6, South Hanover-street, Glasgow.
French Electrical Power Storage Co., Limited,
71, Queen-street, London, E.C.
French Metropolitan General Electric Company,
Limited, 71, Queen-st., London, E.C.
Gérard Electric Light Co., 11, Queen Victoria-
street, London, E.C.
Great Western Electric Light & Power Co., 4,
Great Winchester-st.-buildings, London, E.C.
Gülcher Electric Light & Power Co., Limited,
4, Coleman-street, London, E.C.; works,
Battersea Foundry, London, S.W.
Hammond Electric Light & Power Supply Co.,
110, Cannon-st., London, E.C.
Indian and Oriental Electrical Storage and Works
Company, Limited, 19, Great Winchester-st.,
London, E.C.
INTERNATIONAL ELECTRIC CO., LMTD.,
4, Copthall-buildings, Throgmorton-street,
London, E.C.
Jablochkoff Electric Light and Power Company,
Limited, 2, Great Winchester-st., London, E.C.
Lancashire Maxim Electric Co., Limited,
14A, Peter's-lane, Liverpool. (W. H. E.
Thompson, manager).

Electric Light Companies—continued.

Liverpool Electric Supply Co., Limited (The), 1, Crosshall-st., Liverpool.
 Lyon's Electrical Power Storage Co., Limited, Mansion House Chambers, 11, Queen Victoria-st., London, E.C.
 Maxim Weston Electric Company, Limited, 47, Cannon-st., London, E.C.
 Metropolitan "Brush" Electric Light and Power Company, Lim., 110, Cannon-st., London, E.C.
 NATIONAL CO. FOR THE DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS, LTD., 18, Warwick-st., Regent-st., London, W.
 Northern Electric Light, Power & Appliances Co., Ltd. (The), 104, Commercial-st., Dundee.
 "PILSEN," "JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St. Stephen's-chambers, Telegraph-st., E.C. *See index to advertisers.*
 Provincial (Brush) Electric Light & Power Co., Limited, 110, Cannon-street, London, E.C. (G. Ofor, man.).
 River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.
 Siemens Bros., & Co., Limited, 12, Queen Anne's-gate, London, S.W.
 South African (Brush) Electric Light & Power Co., Lim., 5, Copthall-buildings, London, E.C.
 South Eastern (Brush) Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.
 Stuart Electric Light & Power Company, Limited, 11, Queen Victoria-st., London, E.C.
 TASKER, SONS & CO., New Station-rd., Sheffield.
 Union Electric Light and Power Company, Limited, 2, Copthall-buildings, Throgmorton-st., London, E.C.
 Universal Electric Light Company, 13 and 14, King-st., London, E.C.
 Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. *See index to advertisers.*

Electric Light Pole Manufacturers.

F.—
 G.—

NORMAN & SON, 217 to 223, Argyle-street, Glasgow, and at Barrow-in-Furness.

Electric Lighting Tackle Makers.

F.—*Palans (Fab. de) pour l'Eclairage électrique.*
 G.—*Taunmacher für Electriche Beleuchtung.*

Electric Lighting Supply and Fitting Co., Limited (Manager, W. Bridges Adams), office & works, 28, York-st., London, S.W. *See index to advertisers.*
 Gülicher Electric Light & Power Co., Limited, 4, Coleman-st., London, E.C.; works, Battersea Foundry, London, S.W.
 Sennett, A. R., Electrical Engineering Works, 62, Hutton-garden, London, E.C.
 Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.

Electric Locks.

F.—*Serrures électriques.*
 G.—*Electriche Schlösser.*

Apps, A., 433, Strand, London, W.C.
 Baughan, W. H. & Co., Charlbury, Oxon
 Chubb & Son, 128, Queen Victoria-st., I E.C.
 Hobbs, Hart & Co., 76, Cheapside, London

Electric Measuring Instrument Manufacturers.

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 G.—*Electriche Mass-Instrumente.*

Abbey & Co., 12, Whitehart-street, Cat street, London, W.C.
 Apps, A., 433, Strand, London, W.C.
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southa buildings, Chancery-lane, London, W.
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 GRIFFITH & CO., 4, Queen Anne London, S.W.; works, Reading.
 Kelso & Co., 43, Union-street, Glasgow.
 PATERSON & COOPER, 76, Little London, E.C.
 Theiler, M. & Sons, 86, Canonbury-rd., I N.
 Walker, Sidney F. & Oliver, 195, Sever Cardiff, and at Nottingham.

Electric Railway System.

BAUER & CO., 6, Union-st. Chambe Broad-st., London, E.C. Danchell's p

Electrical Switch Manufacture

F.—*Commutateurs (Fab. de).*
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 Askham Bros. & Wilson, Limited, Y Steel Works, Napier-street, Sheffield. way switch & crossing manufacturers.
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 CUTTRISS & CO., 72, New Briggate, I DEFRIES, J. & SONS, 147, Houn London, E. *See index to advertisers.*
 Garnham & Co., Sash-ct., Wilson-st., I E.C. *See index to advertisers.*
 Gülicher Electric Light & Power Co., I 4, Coleman-street, London, E.C.; Battersea Foundry, London, S.W.
 KING & CO., Western Electric Works, Wine-street, Bristol.
 Martin, A., 54, Percival-street, Cler London, E.C. *See index to advertisers.*

al Switch Manufre.—continued.

Glendenning, St. Paul's-buildings, 21, Foster-row, London, E.C.
 . Berger & Co., 31, Lombard-street, 1, E.C.
 Sidney F. & Oliver, 195, Severn-road, and at Nottingham.
 N & IRISH, 30 Borough-rd., Sunderland
 HOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Woodhouse and Patent Switches, Switches for special designed and made. *See index to advertisers.*

Electric Toys.

F.—Jouets électriques.

G.—Electriche Spielzeug.

al Electric Supply Association, Churson, Wood-green, London, N.
 Appliance Co., Trafalgar-buildings, Long-cross, London, S.W.
 ND, J. B., 12, Borough High-st., London, E.

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F.—Tramways électriques.

G.—Electriche Strassenbahnen.

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 lectric Light Co., Limited; offices and Turk's Head-yard, Turnmill-street, 1, E.C. *See index to advertisers.*

MIDLAND ELECTRIC LIGHT & POWER CO., LIMITED, 4, Great Winchester-st.-buildings, London, E.C.
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AL ELECTRIC APPARATUS CO., Aldermanbury, London, E.C.
 Electric Light & Power Co., Limited, 4, n-street, London, E.C.; works, sea Foundry, London, S.W.

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POLITAN (BRUSH) ELECTRIC F & POWER CO., LIMITED, 110, t-st., London, E.C.

Electrical Transmission of Power—contd.

NATIONAL CO. FOR THE DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS, LIMITED, 18, Warwick-street, Regent-street, London, W.

Rowan, F. J., St. Vincent-street, Glasgow.

Siemens Bros. & Co., Limited, 12, Queen Anne's-gate, Westminster, London, S.W.

WALKER, SIDNEY F. & OLIVER, 195, Severn-road, Cardiff, and at Nottingham.

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

Electrical Agency.

F.—

G.—

THE ELECTRICAL AGENCY, 2, Great St. Helen's, London, E.C. Sale and purchase of electrical patents, introduction of foreign inventions into England, and of English inventions on the continent.

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F.—Condensateurs électriques.

G.—Electriche Condensatoren.

Apps, A., 433, Strand, London, W.C.

Theiler, M. & Sons, 86, Canonbury-rd., London, N.

Electrical Instrument Manufacturers.

F.—Appareils électriques.

G.—Electriche Instrumenten.

Abbey & Co., 12, White Hart-st., Catherine-st., London, W.C.

Apps, A., 433, Strand, London, W.C.

Ash, Moses, & Son, 4, Bull-st., Birmingham.

Baughan, W. H., & Co., Charlbury, Oxon.

Becker, F. E., & Co., 34, Maiden-la., Covent-garden, London, W.C.

Berry, F. H., 18, Percival-st., Clerkenwell, London, E.C.

Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*

British Electric Light Company, Limited, offices and works, Turk's Head-yard, Turnmill-st., London, E.C.

Bulls Power Company, Limited, Cumberland-chambers, Cumberland-st., Liverpool.

Cadiot, E. H., 6, Lime-st., London, E.C.

CASELLA, L., 147, Holborn, London, E.C.

CLARK, L. MUIRHEAD & CO., 23, Regency-st., Westminster, London, S.W.

Conti, A. E., 26A, Smith-st., Northampton-sq., London, E.C.

Cubley & Preston, 4, High-st., Sheffield.

CUTTRISS & CO., 72, New Briggate, Leeds.

DALE, H. & E. J., 4, Little Britain, E.C., and 26, Ludgate-hill, London, E.C. *See index to advertisers.*

Electrical Instrument Manufs.—*contd.*

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 Darton, F., & Co., 45, St. John-st., London, E.C.
 Davis, John, & Son, All Saints' Works, Derby.
 Downs, T., & Son, 192, Bethnal-green-rd., London, E.
 Dring & Fage, 145, Strand, London, W.C.
 Electric Lighting Supply and Fitting Company, Limited, Office and Works, 28, York-st., London, S.W. *See index to advertisers.*
 Electrical Appliances Syndicate, Limited, 8, Union-st., Old Broad-st., London, E.C.
 Electro Dynamic Company (of Philadelphia), C. R. Heap, agent, Archway House, Bush-la., London, E.C.
 Elliott Bros., 449, Strand, and 101, St. Martin's-la., London, W.C. (Testing).
 Everall, John, 222n, Camberwell-rd., London, S.E.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, E.C., and Lawford-rd., London, N.W.
 Garnham & Co., Sash-st., Wilson-st., Finsbury, London, E.C. (*See index to advertisers.*)
 General Electric Apparatus Co., 29, Alderman-bury, London, E.C.
 Gilson David, 360, Kingsland-rd., London, E.
 Griffin, John J., & Sons, 22, Garrick-st., Covent-garden, London, W.C. Appliances for educational purposes.
 GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W.; works, Reading.
 Groves, Wm., 89, Bolsover-st., Fitzroy sq., London, W.
 HARVEY & PEAK (successors to W. Ladd & Co.), Beak-st., Regent-st., London, W.
 HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*
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 Kelways Electric Log Syndicate, Limited (Ed. J. Morris, Sec.) 58, Lombard-st., London, E.C.
 Koerber, J. A., 44, Frith-st., Soho-sq., London, W.
 Lancaster, Jas., & Son, 37, Colmore-row, B'ham.
 LEJEUNE & PERKEN, 101, Hatton-garden, London, E.C.
 LEVI, J., & CO., 40, Castle-st., Holborn (whole-sale), and 2, Dyer's-bldgs., London, E.C.
 LEVY, ARMAND, Electrical Sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ryabroek, Brussels. All classes of electrical, telegraphic and telephonic instruments made for the trade. Railway contracts taken and executed throughout. *See index to advertisers.*
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 Mottershead & Co., 7, Exchange-st., Man
 Meever, R. W., 55, Sidmouth-st., Gray
 rd., London, W.C.
 Negretti & Zambra, Holborn-viaduct, I
 E.C.
 Oakley, W. H., & Co., 202, Grange-rd., I
 S.E.
 ORME & CO., 65, Barbican, London, E.
 Parkes, Jas., & Son, 5 and 6, St. Mary
 Birmingham.
 PATERSON & COOPER, 76, Little I
 London, E.C. *See index to advertisers.*
 Penning, J. R., Southsea Laborator
 Norfolk-st., Southsea.
 Pike, Sanderson & Pike, Faraday Electric
 Virgil-st., City-rd., Manchester.
 Reid Bros., 12, Wharf-rd., City-rd., Lond
 Sadler, Michael, 19, Aston-st., Birmingha
 SAX, JULIUS, 108, Gt. Russell-st., E
 bury, and Bedford Telegraph Works,
 st., London, W.C.
 SCHOTH, G. A., 232, Euston-rd., London
 Siemens Bros. & Co., Limited, 12, Queen-
 gate, London, S.W.
 Simmons, C. J., testing instruments for la
 marine service, galvanometers, resistanc
 condensers, keys, switches, &c., 56, Le
 st., Leighton-rd., Kentish-town, London
See index to advertisers.
 Snell & Glendening, St. Paul's-bldgs.,
 noster-row, London, E.C.
 Société des Lunetiers, 56, Hatton-garden
 don, E.C.
 Stanley, W. F., 13, Railway-approach, I
 bridge, S.E., and 4, Groat Turnstile, I
 W.C. Appliances for educational purp
 Stevens, F. A., 17, Duke-st., London, E.
 Terry, Henry, 229b, Camberwell-rd, I
 S.E.
 Theiler, M., & Sons, 86, Canonbury
 London, N.
 Tisley, S. C. & Co., 172, Brompton-rd., I
 S.W.
 Townson & Mercer, 89, Bishopsgate-st. I
 London, E.C.
 Tyer & Co., Ashwin-st., Dalston Ju
 London, E.
 Utö Carbons Fabrik (Stockholm), 21, Lead
 st., London, E.C.
 Weedon & Irish, 30, Borough-rd., Sunder
 Whalley, A., 71, Fleming-sq., Blackburn
 White, James, 241, Sauchiehall-st., Glas
 WHITING, HENRY GOTHWICKE,
 M.S.A., 11, Poultry-chambers, London
 WOODHOUSE & RAWSON, 11, Quee
 toria-st., London, E.C.

**cal & Mechanical Auctioneers,
Valuers and Arbitrators.**

LEY, KIRK, PRICE & GOULTY,
een Victoria-st., London, E.C.

Electrical Publications.

rician, published at 386, Strand, London,

trician (of New York), published by
ms & Co., 115, Nassau-street, New York.
s for Great Britain, Wm. Dawson & Sons,
annon-street, London, E.C.

ELECTRICAL REVIEW & Telegraphic
l (H. Alabaster & Co.), 22, Paternoster-
ondon, E.C.

trical Review (of New York). G. Worth-
, editor; T. H. Delano, publisher,
rk-row (rooms 14 & 15), New York.

TELEGRAPHIST. Wm. Lynd, editor,
xbridge-rd., London, W.

UNIVERSAL ELECTRICAL DIREC-
(J. A. Berly's), publishers, Wm. Daw-
Sons, 148 and 149, Upper Thames-st.,
a, E.C.

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G.—*Electrische Specialitäten.*

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ger, G., & Co., 29, Aldermanbury, Lon-
.C.

, WILLIAM & SONS (Established
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am; Dom Moltshanoff, Negliuny, Mos-
nd 38, West Smithfield, London, E.C.
ctors to the Cities of Moscow, Mexico,
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nobs for street lamps, and pole caps for
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l cost. See index to advertisers.

Electrical Specialities—Makers—contd.

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Davis & Timmins, Bowlin 5-green-lane, Clerken-
well, London, E.C.

DOULTON & CO., Lambeth Pottery, London,
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lators, porous cells, battery jars, insulators in
stoneware and white earthenware, knobs for
tops of street lamps, caps for telegraph posts,
porous plates (round or square), pipes with
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underground, Slater Lewis's patent self-
binding insulators, crucibles and general
chemical ware. Awarded only medal at the
International Electric Exhibition, London,
1882. Contractors to the Postmaster-General
and Indian Government.

Electric Lighting Supply and Fitting Company,
Limited (W. Bridges Adams, manager). Office
and works, 28, York-st., Westminster, London,
S.W. See index to advertisers.

Electric Signal Company, Limited, 7, Bridge-
avenue, Hammersmith, London, W.

Electric Portable Battery and Gas Igniting Co.,
7, Queen Victoria-st., London, E.C.

Faraday & Son, 3, Berners-st., London, W.

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London, E.C. See index to advertisers.

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Richard's-rd., Leicester. See index to advertisers.

GRIFFITH & CO., 4, Queen Anne's-gate, London,
S.W. Works, Reading. See index to advertisers.

Gülcher Electric Light & Power Co., Limited,
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Foundry, S.W.

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Kelway's Electric Log Syndicate, Limited, 58,
Lombard-street, London, E.C.

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don, W.

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Holborn Circus, London, E.C. *See index to
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Marsh & Co., 18, New Bridge-st., Blackfriars,
London, E.C. *See index to advertisers.*

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well-street, London, E.C.

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Telegraphs, Indian and English Railways, &c.
See index to advertisers.

Terey, Charles A., 114, Lambeth-rd., London, S.E.
Winter, F., 138, London-wall, London, E.C.
See index to advertisers.

WOODHOUSE & RAWSON, 11, Queen
Victoria-st., London, E.C. Inventions carried
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buildings, Chancery-lane, London, W.C. *See
index to advertisers.*

**Electrical Sundries Manufacturers
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lished 1782), 9 to 14, New Bartholomew-st.
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San Paulo, &c. Gas Companies.

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tortoria-st., Manchester.

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st., Westminster, London, S.W. *See in-
dex of advertisements.*

Electric Agency, 20, Great St. Helen's, L.
E.C.

ELECTRO-MOTIVE FORCE CO., 6,
Hanover-street, Glasgow.

Franks, Robinson & Co., 76, Milton-st., F.
London, E.C. Turners of electrical
work in vulcanite, ebonite, ivory, etc.
See index to advertisers.

Garnham & Co., Sash-ct., Wilson-st., F.
E.C. *See index to advertisers.*

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138, London Wall, London, E.C.

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Birmingham.

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viaduct, London, E.C.

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Birmingham.

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Woodhouse & Rawson, 11, Queen Victo-
London, E.C. *See index to advertisers.*

Yearron, H., 353, Old Kent-road, Londo

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G.—Probirinstrumente für Electricität

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Garnham & Co., Sash-ct., Wilson-st., F.
London, E.C. *See index to advertisers.*

Groves, W., 89, Bolsover-st., Fitzroy-
London, W. Professor Hughes' In-
Balance.

Gülcher Electric Light & Power Co., L.
4, Coleman-st., London, E.C. Works,
sea Foundry, S.W.

HARVEY & PEAK, 11A, Beak-st., Reg-
London, W.

Electrical Testing Instrument Makers—
continued.

Y'S, W. T., TELEGRAPH WORKS LIMITED. Offices, 8, Drapers'-gardens, n, E.C.
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IOUSE & RAWSON, 11, Queen ia-st., London, E.C.

Electrical Water-Level Apparatus Makers.

, 433, Strand, London, W.C.
Manufacturing Co., Vulcan Works, e-st., City-garden-row, London, N. *See o advertisers.*

Electricians.

F.—Electricians.

G.—Electricitäts-kundige.

Professor W. Grylls, F.R.S., King's e, London, W.C.
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Jan Charles, 433, Strand, London, E.C.
aniel, 90, St. John-st.-rd., London, E.C.
W. H., 2, Old Palace-yd., London, S.W.
Ilsyd T., M.E., 92, Netherwood-road, Kensington-park, London, W.
C., Woodlands-road, Redhill.
, J. A., 16, New Bridge-st., London, *See index to advertisers.*
W. & Co., Henry-st., Huddersfield.
F., 44, Upper George-st., Bryanstone-, London, W.
E, NEWNHAM (Patent Agent), 91, -st., Cheapside, London, E.C.
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A. Hamilton, 30, Bardolph-rd, London,
, 6, Ridginghouse-st., Gt. Portland-st., n, W.
3, CHARLES FRIEND, 76, Little i, London, E.C.
l & Balcarres, Earl of, 47, Brook-st., n, W.
& E. J., 4, Little Britain, London, E.C.
J. M., Brook-st., Longton, Staffordshire.
i, Alex., 47, London-st., Glasgow.
A., 10, Berkeley-gardens, Camden-hill, ington, London, W.
Wm. H., 48, Hindon-st., Pimlico, Lon-. W.
son, J. & Co., 19, Great George-st., inster, London, S.W.
Dynamic Co. of Philadelphia (general J. R. Heap), Archway-house, Bush-lane, n, E.C.

Electricians—continued.

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Enright, James, West Kensington-park, Lon- don, S.W.
Faulkner, J., 13, Great Ducie-st., Manchester.
Faulkner, W. G. & Co., 16, Endell-st., London, W.C.
French, A. St. Geo. & Co., 21, Finsbury Pave- ment, London, E.C.
Frost, A. J., 6, Westminster-chambers, Victoria- st., London, S.W.
Fynn & Carle, 22, Pigott-st., London, E.
Galton, Capt. D., 12, Chester-st., Grosvenor- place, W.
Gatehouse, T., *Electrical Review*, 22, Paternoster- row, London, E.C.
Gaulard, Lucien, 18, Warwick-st., Regent-st., London, W.
Glover, T. G., Col. R.E., Stapenhill, Sydenham- hill, London, S.E.
Goldenberg, L., 110, Hemingford-rd., London, N.
Graves, James, Anglo-American Telegraph Co., Limited, Valentia, Ireland.
Greener, J. H., 14, St. Swithin's-la., London, E.C.
Gümpel, Charles Godfrey, 49, Leicester-square, Leicester, W.C.
Hannington, George H., 42, Spencer-st., Gos- well-road, London, E.C.
Heap, C. R., Archway-house, Bush-lane, Lon- don, E.C.
Henry & Co., 98, Borough-road, London, S.E.
Hintz, Julius, 21, Liverpool-st., London, E.C., and Eagle Wharf, London, N.
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Jarman, A. J., 25, Richmond-st., St. Luke's, London, E.C.
Jones, Thomas John, 12, Princes-st., Hanover- square, London, W.
Kabath de, N., 57b, Hatton-garden, London, E.C.
LAVENDER, JNO., 11, Todd-st., Corporation- st., Manchester.
Lee, Allen, 3, Camden-cottages, Camden-road, London, N.
Liley, W. & Co., 10a, Church-alley, Liverpool.
Lowden, Geo., Reform-st., Dundee.
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McEVOY, CAPTAIN C. A., 18, Adam-st., Adelphi, London, W.C.
Marr, Jno. Jackson, 31, Moorfields, Liverpool.
Mathieson, J., India Rubber Company, Silver- town, London, E.
Muirhead, Dr. A., Oakwood, 12, Farquhar-road, Upper Norwood, London, S.E.
PATERSON, EDWARD, 76, Little Britain, London, E.C.
Parsons & Cobon, Fountain Works, Chiswick Mill, London, W.

Electricians—continued.

Piggott, William P., 16, Argyll-st., Regent-st., London, W.
 Redmond, D. D., M.D., 126, Sandford-rd., Dublin.
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 Robisher, J., 49, Ardwick-green, Manchester.
 Sabine, R., Grosmont-house, Hampton-wick, Middlesex.
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 Sharples, G., 7, Fishergate, Preston.
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 Society of Telegraph-Engineers and Electricians, 4, The Sanctuary, Westminster, S.W. *For List, &c., see Contents.*
 Stead, Frank V., 50, Lombard-st., London, E.C.
 Thistleton, John B., 1, Old Quebec-st., London, W.
 Tiddy, Wm. N., 12, Princes-st., Hanover-sq., London, W.
 Welsh, B. W., 22, Harrington-sq., Hampstead-rd., London, N.W.
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 WHITING, HENRY GOTHWICKE, A.P.S. & M.S.A., 11, Poultry-chambers, London, E.C.
 Wigner & Harland, 37, Lombard-st., and 38, Holborn-viaduct, London, E.C.
 Wood, Henry George, South Eastern Railway Telegraph Department, London-bridge, S.E.

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F.—Electriciens.

G.—Electricitätskundige.

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 Cooke, Conrad W., 5, Westminster-chambers, Victoria-st., London, S.W.
 Foster, Professor G. C., 12, Hilldrop-road, Brecknock-road, London, N.
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 GARNHAM & CO., Sash-court, Wilson-st., Finsbury, London, E.C. *See index to advertisers.*
 Gould, G. D. & Co., 27, Broomwood-road, Wandsworth-common, London, S.W.
 GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W. Works, Reading.
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 JENKINS, FLEEMING, LL.D., F.R.S., 3, Great Stuart-st., Edinburgh.
 Joel, Henry F., C.E., 9, Tower-chambers, Moor-gate-st., London, E.C.

Electricians—Consulting—continued.

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 Koerber, J. A., 44, Frith-st., Soho-sq., London.
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 Zanni, D., 34, Charles-st., Hatton-garden, E.C.
 Phillips Bros., Lea Telegraph Works, Hawsick, London, E., late of Mackintosh Homerton, London, E.
 Rogers, F. M., 21, Finsbury-pavmt., London.
 Spiller, Geo., 3, Wigmore-st., Cavendish London, W.
 Walker, Sidney F. & Oliver, 195, Severn Cardiff, and at Nottingham.
 WOODHOUSE & RAWSON, 11, Queentoria-st., London, E.C. Reports, to experiments made.

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G.—Elektriker.

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 and Lawford-road, London, N.W.
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 Hall, Edward, 39, Westmoreland-place, road, London, N. *See index to advertisers.*
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 Anderson & Munro, 136, Bothwell-st., Glasgow.
 Apps, A., 433, Strand, London, W.C.

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 ondon, E.C.

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 London, S.W.

& Co., 72, New Briggate, Leeds.

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 ste-hill, London, E.C. *See index to
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ic Electric Company, Limited, Economic
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 London, E.C.

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 ury, London, E.C. *See index to advertisers.*

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 agton. *See index to advertisers.*

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 NEWNHAM, F., 21, Compton-street, Goswell-
 road, London, E.C.

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 Glasgow, and at Barrow-in-Furness.

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 172, St. John-street, London, E.C. *See index to
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 London, E.C. *See index to advertisers.*

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 London, S.W.

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 bury, and Bedford Telegraph Works, Store-st.,
 Bedford-square, London, W.C.

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 21, Paternoster-row, London, E.C. *See index
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 London, W.

Sutcliffe, J. L., 153, South-st. Moor, Sheffield.

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 London, N.

Tyer & Co., Ashwin-st., Dalston-junction,
 London, E.

Vulcan Manufacturing Company, Vulcan Works,
 Roccliffe-st., City Garden-row, London, N.
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Walker, Sidney F. & Oliver, 195, Severn-road,
 Cardiff, and at Nottingham.

Weedon & Irish, 30, Borough-road, Sunderland.

Weston, G., 92, Mile End-road, London, E.

Whalley A., 71, Fleming-square, Blackburn.

White, James, 241, Sauchichall-st., Glasgow.

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 STORAGE COMPANY (Thomas Parker and
 P. Bedford Elwell), Commercial-road Works,
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F.—Electricité—médicale.

G.—Electrotherapie.

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 E.C. *See Magnetic Curative Appliances Mfts.*

Grigg, W., 34, Eastbourne-terrace, Paddington,
 London, W.

Humm, M., 727, Commercial-road, London, E.

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F.—Chirurgiens électriciens.

G.—Chirurgen—Electr.

Lobb, H., 66, Russell-square, London, W.C.

Electric Meters—Makers of.

F.—Instruments de précision.

G.

Apps, A., 433, Strand, London, W.C.

GRIFFITH & CO., 4, Queen Anne's-gate
London, S.W.; works, Reading.

Joel, Henry F., C.E., Tower-chambers, Moor-
gate-street, London, E.C.

Varley Patents Proprietary Co., Limited, Mild-
may Park Works, London, N.

WOODHOUSE & RAWSON, 11, Queen Vic-
toria-street, London, E.C.

Electro Depositors.

F.—Electro depositions.

G.—Galvanisatoren für Kunstachen.

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to the trade, Charlbury, Oxon.

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stock, panels for cabinet makers, and all kinds
of electrotyping for the trade, 36, Percival-st.,
London, E.C. *See index to advertisers.*

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Limited, 4, Coleman-street, London, E.C.;
Works, Battersea Foundry, London, S.W.

OPPERMANN BROS., Brewhouse-yard, 172,
St. John-street, London, E.C.

Electro Metallurgist.

F.—

G.—

BUCK, C., electro gilding and plating, 20, St.
John's-lane, London, E.C.

Electro Amalgamator Company, Limited, Tower-
chambers, Moorgate-st., London, E.C.

ELECTROLYSIS COMPANY, LIMITED, 49,
Queen Victoria-st., London, E.C.

King, J. W., 15, St. John's-square, Clerkenwell,
London, E.C. Holder of certificate from City
and Guilds of London Institute.

Electro-Motor Manufacturers.

F.—Electro moteurs (Fab. d').

G.—Electrische Motors.

Apps, A., 433, Strand, London, W.C.

Binswanger, G. & Co., 29, Aldermanbury, Lon-
don, E.C.

Blakey, Emmott & Co., Northern Telegraph
Works, Halifax; and 55 and 56, Southampton-
buildings, Chancery-lane, London, W.C.

Clark, M., 43, Renfield-street, Glasgow.

CROMPTON, R. E., 4, Queen Victoria-st., Lon-
don, E.C. (The Bürgerin.) *See index to advertisers.*

CUTTRISS & CO., 72, New Briggate, Leeds.

DALE, H. & E. J., 4, Little Britain, and 26,
Ludgate-hill, London, E.C.

Duncan Bros., 32, Queen Victoria-st., London,
E.C.

Electro-Motor Manufacturers—

Electric Lighting Supply and fitting C
Limited, office and works, 28, 1
Westminster, London, S.W.

Electro Dynamic Company of Phil
(C. R. Heap, general agent), Archway
Bush-lane, London, E.C.

Goold, G. D. & Co., 27, Broomswo
Wandsworth-common, London, S.W.

Gülcher Electric Light and Power C
Limited, 4, Coleman-street, E.C.;
Battersea Foundry, S.W.

Howe Machine Company, Limited
Universal," Avenue-st., Bridgeton, G

Immisch, Moritz, Electric Works, Pe
Ryland-rd., Kentish Town, London, 2

KING & CO., Western electrical works,
Wine-st., Bristol.

Kinetic Engineering Company 1, W
place, Doctor's-commons, London, E.C

Koerber, J. A., 44, Frith-st., Soho-sq., Lo
OPPERMANN BROS., Brewhouse-ya
St. John-st., London, E.C.

Sennett, A. R., electrical engineering
Hatton-garden, London, E.C.

SNELL & GLENDENING, St. Paul'
21, Paternoster-row, London, E.C.

Spence, J. Berger & Co., 31, Lombai
London, E.C. *See index to advertisers.*

Theiler, M., & Sons, 86, Canonbury-ro
don, N.

Toynbee, H., 18, Malvern-villas, Willaed
Vulcan Manufacturing Company, Vulcar

Rocliffe-street, City-garden-row, Lon
Walker, Sidney F. & Oliver, 195, Seve

Cardiff, and at Nottingham.

WEEDON & IRISH, 30, Borough-road,
land.

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Electro-Plate Manufacturers & I

F.—Plaqué (Fab. et Marchands de

G.—Galvanische Versilberer.

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Blewitt, E., 69, Hatton-garden, London
Bolton, J., & Sons, 64, George-street

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Collis & Co., 57, Cambridge-street, Birn

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don, E.C.

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London, W.C.

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Holborn, London, E.C.

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E.C.

Hand & Son, St. Mary's-chambers, St. M
London, E.C.

Harrison, W. W. & Co., 99, Hatton
London, E.C.

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Is, & Co., electro-plate manufac-
nickel silver refiners, Peel-street,
ton.
Sons, 13, Thavies-inn, Holborn-
on, E.C.
o., 58, Houndsditch, London, E.
& Co., 10, Dyer's-buildings,
ndon, E.C.
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ingham.
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Without, London, E.
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, 28, Holborn-viaduct, London, E.C.
, 24, Holborn-viaduct, London, E.C.
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und Galvanoplastik—Materialien für.
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London, E.C.

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Platers and Gilders.

—Doreurs et argentiers.
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ALL & CO., LIMITED, 22, Ely-
-circus, London, E.C.
, 9, Northampton-st., Birmingham.
, 153, South-st., Moor, Sheffield.

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Manufacturers.

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tie (Fab. de).*
Maschinen zum Versilbern.
, 91 & 92, Constitution-hill, Bir-
See index to advertisers.
nry, 2, Victoria-mansions, Vic-
ndon, S.W. See last page of
s.
Company, Charlotte-st., Black-
m, S.E.

Electro Plating and Depositing Machine
Manufacturers—continued.

Gülcher Electric Light and Power Company, 4,
Coleman-st., London, E.C.; works, Battersea
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LEVY, ARMAND, electrical sundriesman, 252,
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WOLVERHAMPTON ELECTRIC LIGHT,
STORAGE AND ENGINEERING COM-
PANY (Thomas Parker & P. Belford Elwell),
Commercial-rd. Works, Wolverhampton.
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London, E.C.

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F.—Electroliers (Poseurs d').

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BARWELL, SON & FISHER, Worcester
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BLEWS, WILLIAM, & SONS (Established
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San Paulo, &c. Gas Companies.
Smith & Chamberlain, 3, New Bartholomew-st.,
Birmingham.
Winfield, Robert Walter & Co., Cambridge-st.
Works, Birmingham, and Holborn-viaduct,
London, E.C.
WOODHOUSE & RAWSON, 11, Queen Vic-
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notice. See index to advertisers.

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G.—Candalaber für Electriche Lampen.

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ANDERSON & MUNRO, 136, Bothwell-st.,
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Barnes & Co., 311, Broad-st., Birmingham.
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Works, Clement-st., Birmingham.
Bennett Bros., St. Thomas's-bldgs., Liverpool.
Berry, Z. D., & Sons, 16, Regency-st., Lon-
don, S.W.
Besson, F., & Co., 198, Euston-rd., London, N.W.
Biggs, John, 31 & 102, Borough-rd., London, S.E.
BLEWS, WILLIAM, & SONS (Established
1782), 9 to 15, New Bartholomew-street, Bir-
mingham; Dom Moltshanoff, Negliuny, Mos-
cow; and 38, West Smithfield, London, E.C.
Contractors to the Cities of Moscow, Mexico,
San Paulo, &c. Gas Companies.

Electrolier Manufacturers—continued.

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 Bray, George & Co., Blackman-lane, Leeds.
 Brown & Co., 186, Piccadilly, London, W.
 Buchan, T. & Sons, 249, Argyle-st., Glasgow.
 Buchan, H., 50, Oswald-st., Glasgow.
 Bucknall, A., 19, Renshaw-st., Liverpool.
 Carpenter & Ford, Cranmer Works, Bishop-st. South, Birmingham.
 Catterson, Samuel Prince, 34 & 36½, Gt. Dover-st., London, S.E.
 Coleman, G. T., 9, Cheapside, Leicester.
 Cooper, William, & Son, 65, St. Mary Axe, London, E.C.
 Davis, Moses, & Co., 27, Wellclose-square, London, E.
 DEFRIES & SONS, 147, Houndsditch, London, E. *See index to advertisers.*
 Dietz & Co., St. Paul's-buildings, Carter-lane, Cannon-st., London, E.C.
 Earl & Philp, 113, London Wall, London, E.C.
 Electric Lighting Supply and Fitting Company, Limited, office and works, 28, York-st., Westminster, London, S.W. Manager, W. Bridges Adams. *See index to advertisers.*
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 Fairbairns, W. & Sons, 65, St. Mary Axe, London, E.C.
 Faraday & Son, 3, Berners-st., London, W. *See index to advertisers.*
 Felton, T., Yates-st., Birmingham.
 Fleay, J. M., 72, Cable-st., Liverpool.
 FORREST, G., & SON, 23, New-street-square, London, E.C.
 Fowles, Thomas, & Co., 200, Ebury-st., London, S.W.
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 Green, Jas., & Nephew, 107, Queen Victoria-st., London, E.C.
 Greene, H., & Son, 153, Cannon-st., London, E.C.
 Halla, Chas. Ellis, 74, St. George-st., London, E.
 Hinrichs, C. F. A., 42 & 44, Cannon-st., London, E.C.
 Hodge & Co., 100 & 101, Hatton-garden, London, E.C.
 Hughes, Rich. Hugh, 96, Hatton-garden, London, E.C.
 Hulett, D., & Co, 55., High Holborn, London, W.C.
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 Koeppen & Wenke, St. Mary's-chambers, St. Mary Axe, London, E.C.
 Kuhne, Gebrüder, 47, Basinghall-st., London, E.C.
 LAING, WHARTON & DOWN, 8 & 9, Holborn-viaduct, London, E.C.
 Meek, James & Co., 13, Picardy-pl., Edinburgh.

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 Moore & Co., 2, Judd-st., London, W.C.
 Napper, Sidney, 9, Fenchurch-st., London.
 OSLER, F. & C., 230 & 231, Broad-st., London.
 Patton, George, Neville-st., Newcastle.
 Perry & Co., 72, New Bond-st., London.
 Phillips, W. P. & G., 155, New Bond-st., London, W.
 Pillischer, Moritz, 88, New Bond-st., London.
 Pontifex, Samuel & Co., 22, Coleman-st., London, E.C.
 Prince & Symmons, 128, 130, Commercial-st., London, E.
 Ratcliff, Edmund, 59, St. Paul's-square.
 Schlesinger, A. & Co., 8, Coleman-st., London, E.C.
 Sigrist, Richard, 30, Tustin-st., Old Kent Road, S.E.
 Smith & Chamberlain, 3, New Bartholomew-st., Birmingham.
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 Strode & Co., 48, Osnaburgh-st., London.
 Taylor Bros., 232, Bradford-st., Birmingham.
 Tomlinson & Rettich, 34 & 35, Gerrard-st., London, W.
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Electrotypers.

F.—Electrotype.

G.—Galvanicure.

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 Bullen, T. E. H., 28, Warwick-lane, London.

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W.C.
& Son, 28, Old-st., Aldersgate-st.,
E.C.
J. & M., 166, Buchanan-st., Glasgow.
R. F., & CO., 1 & 2, Goldsmith's-
reat New-st., Fetter-lane, London, E.C.
Koolman & Isger, Harp-alley, 82,
lon-st., London, E.C.
Co., 151, High Holborn, London, W.C.
Anderson, 5, West-st., Seven-dials,
W.C.
H., 92, Blackfriars-rd., London, S.E.
ic Etching Company, 23, Farringdon-
don, E.C.
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E.C.
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chester.
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nding machines, genuine emery cloth,
st blue emery paper (Müller, Uhlich &
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don. *See index to advertisers.*
ONNENTHAL & CO. ("Tanite"),
en Victoria-st., & Lambeth-hill, Lon-
don. *See index to advertisers.*

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ngine and Syren Fog Signals Company,
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Machines (Fab. de)—Gaz Moteurs.

G.—Gas-Motoren.

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don, E.C.

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st., Bradford.
Cobham & Co., Stevenage, Herts.
Crossley Bros. ("Otto"), Manchester; London
office, 24, Poultry, E.C.; Glasgow office, 193,
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E.C.
Giddings & Dacre, Ducie-st., Manchester.
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bridge, Deansgate, Manchester.
Griffin, Samuel, Kingston Iron Works, Ambury,
Bath.
Hallewell Gas Engine Company, 21, Bridge-st.,
Manchester.
Ladd, John, & Co., 116, Queen Victoria-street,
London, E.C.
London Gas Engine Company, Dalston Junction, E.
Mobbs, Henry, Vulcan Works, Northampton.
Orme, Fredk., & Co., 9, St. Andrew's-st., Holborn-
viaduct, London, E.C. *See index to advertisers.*
Picking, Hopkins & Co., 58, Bow-rd., London, E.
Simon, L. ("Eclipse") Nottingham.
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don, E.C.
TANGYE BROS., 35, Queen Victoria-st., Lon-
don, E.C.
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Woodhead, John, R., Whitehall-road, Leeds.

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Steam engines and boilers.
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DAVEY, PAXMAN & CO., The Standard Iron
Works, Colchester, Essex. *See index to adver-
tisers.*

Engine & Boiler Makers—Steam—contd.

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Duncan Bros., 32, Queen Victoria-st., London, E.C.

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WELFORD BROS., King's-house Pallion, Sunderland.

Wilson, A., & Co., Vauxhall Iron Wandsworth-road, S.W. *See index to advertisers.*

WOLVERHAMPTON ELECTRIC STORAGE AND ENGINEERING PANY (Thomas Parker and P. Elwell), Commercial Road Works, W'h

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G.—Ingenieure.

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BLEWS, WILLIAM, & SONS (Est. 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Neglium cow; and 38, West Smithfield, London. Contractors to the Cities of Moscow, San Paulo, &c. Gas Companies.

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Chamberlain & Hookham, Limited, 4, Northolomew-st., Birmingham.

Cooke, Conrad W., 2, Victoria-mansion, Victoria-st., Westminster, London, S.W.

Electric Light—continued.

MON, R. E. & CO., 4, Queen Victoria-
don, E.C. *See index to advertisers.*

1-Winfield Electric Light Association,
Edge-st. Works, Birmingham, and 49,
Edon-st., London, E.C. *See index to*
advertisers.

PAXMAN & CO., The Standard Iron
Works, Colchester, Essex. *See index to adver-*

P. R. F., 21, Litchfield-st., Soho,
W.

P. E., 14, Croxted-lane, West Dulwich,
S.E.

P. Henry, 2, Victoria-mansions, Vic-
t., Westminster, London, S.W. *See*
index of advertisements.

son, J. & Co., 19, Gt. George-st.,
S.W.

Light Carbon Company, 133A, Gt. Suf-
f., London, S.E. *See index to advertisers.*

Dynamic Company of Philadelphia (C.
ap, general manager), Archway-house,
Lane, London, E.C.

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E.C.

& Co. (F. R. Francis, C.E., manager),
Telegraph Works, Hatton-garden,

1, E.C., & Lawford-road, London, N.W.
muel, & Sons, 5, Marylebone-passag-
e, London, W.

t. D. & Co., 27, Broomswood-road,
worth-common, London, S.W.

A., 30, Finsbury-pavemt., London, E.C.
Electric Light and Power Company, 4,
n-st., London, E.C.; works, Battersea

y, London, S.W.

r & Co., 4, Circus-st., York-st., Mary-
road, London, W.

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quare, London, W.C.

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s, London, E.C.

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W. C., & Co., Bradford-rd., Huddersfield.

SON, J., F.R.S., 4, Westminster-cham-
ictoria-st., London, S.W.

Andrew, C.E., F.R.S.E., &c., Prin-
ciple of Science and Arts, 38, Bath-st.,
W.

ry F., C.E., 9, Tower-chambers, Moor-
London, E.C.

t Phillips, 14, Union-court, Old Broad-
ndon, E.C., and Victoria Works,
n, London, S.E.

J. A., 44, Frith-st., Soho-sq., London, W.

Engineers—Electric Light—continued.

Laing Electric Light & Power Company, Limited,
4 & 5, Three Crown-square, London, S.E.

LAING, WHARTON & DOWN, 8 & 9,
Holborn-viaduct, London, E.C.

Lane-Fox, St. George, Garden-mansions, Queen
Anne's-gate, London, S.W.

Little, James, 69, Clayton-st., Newcastle,

Massey, Wm. H., Twyford, Berks.

NORMAN & SON, 217 to 223, Argyle-st., Glas-
gow, and at Barrow-in-Furness.

OPPERMANN BROS., Brewhouse-yard, St.
John's-st., London, E.C. *See index to ad-*
vertisers.

Paul, A. Louis, A.S.T.E., 16, Kensington-sq.,
London, W.

Raworth, John S., 6, St. Mary's-gate, Manchester.

Reid Bros., 12, Wharf-road, City-road, London, N.

ROBEY & CO., Globe Works, Lincoln. *See index*
to advertisers.

Rowan, F. J., 134, St. Vincent-st. Glasgow.

Sennett, A. R., Electrical Engineering Works,
Hatton-garden, London, E.C.

Sharples, G., 7, Fishergate, Preston.

SIEMENS BROS. & CO., LIMITED, 12,
Queen Anne's-gate, Westminster, London, S.W.

Sington, A. & Co., 5, St. Peter's-square, Man-
chester.

SNELL & GLENDENING, St. Paul's-build-
ings, 21, Paternoster-row, London, E.C. *See*
index to advertisers.

Starnes, J. S., & Sons, 13, Broad-st., Ratcliff,
London, E.

TASKER SONS & CO., New Station-road,
Sheffield. *See index to advertisers.*

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Severn-road, Cardiff, and at Nottingham.

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G.—Ingenieure—Electricische.

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South Woodside-road, Glasgow.

Apps, A., 433, Strand, London, W.C.

Ayrton & Perry, Tolpher House, Gt. Eastern-st.,
London, E.C.

Bailey, Geo., 55, Gray-st., Blackfriars-rd.,
London, S.E.

BERLY, J. A., C.E., A.S.T.E., &c., 16, New
Bridge-st., London, E.C. *See index to advertisers.*

Berry, W. D. & Sons, Brook-st., Huddersfield.

Blakey, Emmott & Co., Northern Telegraph
Works, Halifax; and 55 and 56, Southampton-
buildings, Chancery-lane, London, W.C. *See*
index to advertisers.

Bland, John H. & Co., 75, Blackfriars-road,
London, S.E.

Engineers—Electrical—continued.

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Huddersfield.
BURLEY, WM., Tower-chambers, London-
wall, London, E.C.
Calder, J. J. & Co., 154, Westminster-bridge-
road, London, S.E.
Carlyle, W.A., 91 & 92, Constitution-hill, Bir-
mingham. *See index to advertisers.*
CARUS-WILSON, C. A., 11, Queen Victoria-
London, E.C.
CLARK, L., MUIRHEAD & CO., 23-31,
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ow.
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R, SONS & CO., New Station-road,
eld. See index to advertisers.
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ff, and at Nottingham.
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a Electric Company, 59, Moorgate-st.,
on, E.C.
y, A., 71, Fleming-square, Blackburn.

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ia Company, Colchester, Essex. Special
and machinery made to any design.
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ury, London, E.C. AMERICAN TOOLS.
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aders, steam hammers, &c.
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& SON, 51 to 54, Charlotte-st., B'ham.
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viaduct, London, E.C. See index to
tisers.

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ria-street, and Lambeth-hill, London,
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ican Cleveland twist drills, parallel
tool-holders, fans, forges, &c. See index
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ill-lane, Manchester.
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London, E.C.
s Machine Tool Co., Limited, Cornwall
e, 35, Queen Victoria-st., London, E.C.

Engravers on Wood.

F.—*Graveurs sur Bois.*

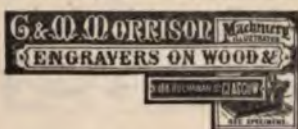
G.—*Holtzbildhauer.*

Walter & Sons, 172, Strand, London, W.C.



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W.C. See index to advertisers.
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don, E.C.
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noster-row, London, E.C.



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F.—*Fentre (Fab. de).*

G.—*Filz-Fabrikanten.*

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mondsey, London, S.E.
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Town, London, E.
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London, E.C.
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row, London, E.C.
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hithe New-road, London, S.E.
Rogers, John, 1, Fenchurch-st., London, E.C.

Fibre Manufacturers—Gelatinized.

F.—

G.—

Courtenay & Trull, 17, Dey-st., New York,
U.S.A. See index to advertisers.

Fibre Manufacturers—Vulcanized.

F.—

G.—

BINNEY & SON (sole agents for Scotland), 62, Queen Victoria-st., E.C., and Catherine-st., City-road, London, E.C.; 22, Wellington-st., Leeds; 50, West Howard-st., Glasgow, and 63, Broad-st., Birmingham. *See index to advertisers.*

Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*

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*** File Manufacturers.**

F.—

G.—

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F.—*Appareils pour l'éclairage électrique*

G.—

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WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Estimates given for every class of work for electric installations. *See index to advertisers.*

*** Fittings Manufacturers for Engines and Boilers, &c.**

F.—

G.—

BLEWS, WM., & SONS, (Etabd. 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the cities of Moscow, Mexico, San Paulo, &c. Gas companies.

*** Fittings Manufacturers for Engines and Boilers, &c.—continued.**

Duncan Bros., 32, Queen Victoria-st., I E.C. *See index to advertisers.*

SELIG, SONNENTHAL & CO., 85, Victoria-st., and Lambeth-hill, London

*** Flexible Tube Makers—Gas.**

F.—*Tuyaux à Gas flexibles (Fab. de)*

G.—

Britannia Rubber & Kamptulicon Co., 32, C st., London, E.C.

Levy, Armand, electrical sundriesman, 25 well-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

Lewis, Edwin & Son, Wolverhampton.

*** Flexible Tube Makers—Speaki**

F.—*Tuyaux flexibles, Téléphones, etc. (Fa*

G.—*Fabrikanten für, Sprech- und Tel Röhren.*

Britannia Rubber & Kamptulicon Co., 32, C st., London, E.C.

Foster & Williams, 87, Grange-road, Be sey, London, S.E.

Levy, Armand, electrical sundriesman, 35 well-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

Flexible Tube Makers—Telepho

F.—*Tuyaux flexibles.*

G.—

Britannia Rubber & Kamptulicon Co., 32, C st., London, E.C.

Eschmann Bros. & Walsh, 23, Bartho sq., Old-st., London, E.C.

Francis & Co. (F. R. Francis, C.E, Ma Eagle Telegraph Works, Hatton C London, E.C., & Lawford-rd., London.

LEVY, ARMAND, electrical sundriesma Goswell-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

SHEATH BROTHERS, 89, City-rd, I E.C. *See index to advertisers.*

Galvanic Apparatus Dealers.

F.—

G.—

Apps, A., 433, Strand, London, W.C.

Cubley & Preston, 4, High-st., Sheffield.

Faulkner, R. C., 16, Endell-st., London, W

Koerber, J. A., 44, Frith-st., Soho-sq., Lond

ORME & CO., 65, Barbican, London, E.C

Parsons, Fredk., 30, Gallowtree-gate, Lei

Galvanized Wire Manufacture

(*See wire manufacturers—galvanized ire*

Galvanizers.

F.—Galvanizers.

G.—Galvanisireur für Eisen.

Green, Limited, 11, Bury-st., St. xe, London, E.C.

. T. & Co., Albert Works, Stewart-st., hampton.

d Galvanized Iron Co., 19, Grace-st., London, E.C.

k A., Clarence-st., Wolverhampton.

Dore & Co., 4, Corbet-ct., Gracechurch-don, E.C.

B. & Co., 90, Cannon-st., London, E.C.
n Iron Co., Limited, Wolverhampton.

& SWINNERTON, Barrow Steel
orks, Barrow-in-Furness.

s. & Co., 110, Cannon-st., London, E.C.
vanizing & Tin Coating Co., 46, Tower-

s, Finsbury-pavement, London, E.C.
on Galvanizing & Metal Co., Limited,

bard-st., London, E.C.

thomas, Ettingshall, Wolverhampton.

. & Sons, Melbourne-st., W'hampton.

WIN & CO., LIM., Offices, 5, Great
ster-st., London, E.C., Works, Millwall,

E.

Thomas & Co., 56, Borough-rd., North

, J. & J. & Co., 5, Middle-row, Wolver-

l.

'S, W. T., TELEGRAPH WORKS
IMITED, Offices, 8, Drapers'-gardens,
E.C.

ilton, 1, Pearson-st., Wolverhampton.

J. & C., Portfield Iron Works, Dudley
pton.

Beehive Works, Tame-st., Bilston.,

nl. & Co., Drayton-st. West, Wolver-

l.

alvanised Iron Company, 27, Wharf-
ty-road, London, N.

ros., 19, Gracechurch-st., London, E.C.

z SON, 121, London-rd., S.E., Bishops-
C., and Batterssea, London, S.W. Zinc

roofing cheapest and best, all kinds of
k galvanised, references to largest works
orld, electric battery plates, &c.

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ndon, E.C.

rown Galvanised Iron Co., 118, Cannon-
don, E.C.

S BROS., Limited, 116, Church-st.,
gton.

lerick & Co., Caledonia Works, Halifax.

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l., 86, New John-st.-west, B'mingham.

c Co., Limited, 19, Jewin-st., London,

s Wire & Iron Co., 2, King William.
don, E.C.

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lane, London, E.C.

Wall, Charles & Son, 28, Holborn-viaduct,
London, E.C.

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Gas Generating Machine Manufacturers.

F.—

G.—

Edmundson, J., & Co., 10, Great George-st.,
London, S.W.

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Rowan, F. J., 134, St. Vincent-st., Glasgow.

Gauge and Draw-plate Makers.

F.—

G.—

Orme, Fredk. & Co., 9, St. Andrew's-st., Hol-
born-viaduct, London, E.C. *See index to
advertisers.*

*** Gauge Glass Manufacturers.**

F.—

G.—

TOMEY & SONS, Tay Glass Works, Perth.

SELIG, SONNENTHAL & CO., 85, Queen
Victoria-st., and Lambeth-hill, London, E.C.

HOUGHTON, GEO., & SON, 89, High Holborn,
London, W.C.

*** Gauge Makers.**

F.—

G.—

Haman & Buchanan, 75, Robertson-st., Glasgow.

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Victoria-st., and Lambeth-hill, London, E.C.

See index to advertisers.

CASELLA, L., 147, Holborn, London, E.C.

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Requisites.**

F.—Fournitures générales électriques.

G.—Händler in electrischen Requisitionen.

Apps, A., 433, Strand, London, W.C.

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index to advertisers.*

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London, E.C. *See index to advertisers.*

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tisers.*

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row Wine-st., Bristol.

Liverpool Electric Supply Company, 1, Crosshall-
st., Liverpool.

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S.W.

SNELL & GLENDENING, St. Paul's-build-
ings, 21, Paternoster-row, London, E.C.

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G.—Neusilber-giesserei.

Osborne & Co., 11, Great Garden-st., White-chapel-rd., London, E. *See index to advertisers.*

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F.—Verre (Cintreurs de).

G.—Glas-Spanner.

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Sharp, Hy., 59, Paul-st., Finsbury, London, E.C.
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Wauthier, J., 53, Red Lion-st., London, E.C.
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F.—Cellules-verres.

G.—Glaskrüge für Electriche Batterien.

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F.—Verre (Fab. de globes).

G.—Glaskugeln für electriche Lampe

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F.—Abats-jour en verre (Fab. de)

G.—Glasklocken-Fabrikanten.

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—*Regulator-Fabrikanten.*

thers, 32, Queen Victoria-st., Lon-

W. & Co., Cottage Lane Works,
London, E.C. *See index to advertisers.*
ndening, St. Paul's Buildings, 21,
r-row, London, E.C.

& ROBINSON, FERRY WORKS,
DITTON, SURREY. AUTO-
ELECTRIC. WILLANS' PATENT.
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F.—Graise (Fab. de).

—*Schmiere-Fabrikanten.*

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n, E.C. Sole manufacturers of their
INFUSIBLE GREASE for High
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oad, London, E.C. *See index to*

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s, Bernard-road-park, Sheffield.

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F.—Fils électriques.

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ers.

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tent.

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F.—

G.—

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Manufacturers and Dealers.**

F.—Caoutchouc (Fab. et Mar. de).

G.—Indiarubber—Fabr.

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Bow-lane, London, E.C.

Anderson, Abbott & Anderson, 37, Queen Vic-
toria-st., London, E.C.

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don, E.C.

Baird, Arch. & Son, 67, Robertson-st., Glasgow.
Barbican India Rubber Company, 1, Barbican,
London, E.C.

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well-st., London, E.C.

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st., Glasgow, and 63, Broad-st., Birmingham.
Binswanger, G. & Co., 29, Aldermanbury, Lon-
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Broadhurst & Co., 63, Bishopsgate-st. Within,
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don, E.C.

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Glasgow.

Dickson & Co., 33-35, Lowgate, Hull.

East London Rubber Company, 3, Gt. Eastern-st.,
London, E.C.

Edwards & Bradley, 266, South Lambeth-road,
London, S.W.

FEARNS, FRANCIS H. & CO., Trafalgar
Works, Old Kent-road, London, S.E.

FOSTER & WILLIAMS, 87, Grange-road, Ber-
mondsey, London, S.E. India rubber and
gutta percha goods of all descriptions.

Garratt, Alfred, 70, Cheapside, London, E.C.

Garrett, Geo. Wm., india rubber manufacturer,
205, Kingsland-road, London, E.

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don, E.C.

**India Rubber and Gutta Percha
Manufacturers and Dealers—continued.**

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Glover, W. T. & Co., chief office, 25, Booth-st.,
Manchester; London office, 28, Budge-row,
E.C.; Glasgow office, 85, Buchanan-st.
Gutta Percha Company, 18, Wharf-rd, London, N.
Hailwood, J. & T., Ramsay-st., Rochdale.
**HARBURG INDIA RUBBER COMB COM-
PANY**, 138, London-wall, London, E.C.
Harburg & Vienna India Rubber Co., 10, Tower-
chambers, Finsbury-pavement, London, E.C.
Harding, Cocks & Co., 29, Jewry-st., London, E.C.
Hart Bros., 40, Monkwell-st., Cripplegate, Lon-
don, E.C.
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Hill, Zachariah, 1, Ann-st., Union-sq., Islington,
London, N.
Hille, Gus. L., 63, Finsbury-pavement, London,
E.C.
India Rubber, Gutta Percha & Telegraph Works
Co., Limited, 106, Cannon-st., London, E.C.
Irwell India Rubber & Gutta Percha Works, 6,
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Lang, Jonas & Jules, 113, Charterhouse-buildings,
Aldersgate-st., London, E.C.
Lennard, G. H., 8 & 21, St. John-st., Hull.
LEVY, ARMAND, electrical sundriesman,
cable wire, sheet tissue, &c., &c., 252, Gos-
well-road, London, E.C., and 42, Rue de
Ruysbroeck, Brussels.
Livermore, Isaac, 3, College-hill, London, E.C.
Love, Alfred & Co., Old Shot Tower Wharf,
Commercial-road, Lambeth, London, S.E.
MacKay & Co., T. W., Stockton-st., Middlesbro'.
Mackintosh & Co., 106, Queen Victoria-st., Lon-
don, E.C.
McLellan, Geo. & Co., 55, Robertson-st., Glasgow.
Master & Titford, Luke-st., Finsbury, London,
E.C.
Meiter, C. W. & Co., 86, Gracechurch-st., Lon-
don, E.C.
MOFFATT, ALEXANDER & CO., 26, College-
st., Dowgate-hill, London, E.C.
Moseley, David & Sons, Chapel Field Works,
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New York Hamburg Rubber Company, 8, Cole-
man-st., London, E.C.
Nisbet, Wm., 128A, Queen Victoria-st., London,
E.C.
NORTH BRITISH RUBBER CO., LIMITED,
57, Moorgate-st., London, E.C.
Northern India Rubber Company, South Retford,
Notte.
Somerville, W., 34A, Belvoir-st., Leicester.
Quin, Jas. & Co., 112, Queen Victoria-st., Lon-
don, E.C.
Rennie, John, 138, High Holborn, London, W.C.
Richardson, Jas. Edwin, 12, Duke-st., London-
bridge, London, S.E.

**India Rubber and Gutta Per
Manufacturers and Dealers—co**

Russell, Edwd. & Co., 34A, High Holb-
don, W.C.
Russell, Henry & Co., 19, Waterloo-ro-
don, S.E.
Schoenfeld, J., 21, Jewin-crescent, Al
st., London, E.C.
SHEATH BROS., 89, City-road, Lond
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Smith, Alex., 20, Dixon-st., Glasgow.
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F.—Encre (Fab d').

G.—Dinte-Fabrikanten.

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G.—Iridium-Fabrikanten.

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G.—Eisen-giesserei.

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F.—

G.—

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G.—

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STANTON IRON WORKS CO., LIMITED, 80
& 81, Palace-chmbrs, Bridge-st., London, S.W.

Taunton (R. H.) & Hayward, 115 & 116, Palmers-
ton-buildings, London, E.C.

Pipe Makers—Lead.

F.—Tuyaux—Plomb.

G.—Röhren—Bleis.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. Gas and water pipes.

Burr, G., Lead Works, Shrewsbury.

Campbell, T. B. & Sons, Clyde Lead Works, Cornwall-street, Paisley-road, Glasgow.

Cashmore, S. & Co., 42, Victoria-st., Bristol.

Cox Brothers & Co., Butcher-st., Nottingham.

Eyton, A., 34, James-st., Liverpool.

Foster, Blackett & Wilson, 2, Mincing-lane, London, E.C., and Lombard-st., Newcastle-on-Tyne.

Gordon, A. M. C., & Co., 57, Bridgwater-st., Liverpool.

Gould, E., & Co., 4, Cornwall-st., Devonport.

Hanson, Dale & Co., Colne-road, Huddersfield.

Hutchinson, H., & Son, Brewerley, Pateley-bridge, Leeds.

James & Rosewall, Octagon-st., Plymouth.

Kerwood, S., 32, College-st., Portsea.

Locke, Blackett & Co., St. Anthony's, Newcastle-on-Tyne.

Sheldon, Bush & Co., Choose Lead Works, Crow-hole, Bristol.

Smith, B. G., Hope-st., Halifax.

Stevenson, W. & Co., 74, Brown-st., Glasgow.

Sutcliffe, W., & Son, Adelaide-st., Halifax.

Walkers, Parker, Walker & Co., Low Elswick, Newcastle-on-Tyne.

Platina Smiths.

F.—Platine.

G.—Platina-Schmiede.

Benham & Froud, 40, 41 & 42, Chandos-st., Strand, London, W.C.

Johnson, Matthey & Co., 74 to 80, Hatton-garden, London, E.C.

Platinum Manufacturers and Refiners.

F.—Platine (Raffineurs de).

G.—Platinum-Läuterer.

DESMOUTIS, H. F., LE BRUN & CO., 8, Southampton-st., Strand, London, W.C.

Johnson, Matthey & Co., 74 to 80, Hatton-garden, London, E.C.

Westwood, Chas., 2 & 3, St. Paul's-square, & 53, Great Hampton-st., Birmingham.

Platinum Retort and Boil Manufacturers.

F.—Platine (Fab. de).

G.—Platina-Kolben und Kessel.

Benham & Froud, Chandos Metal Works & 42, Chandos-st., Strand, London, W
DESMOUTIS, H. F., LE BRUN & Southampton-st., Strand, London, W
Johnson, J., & Sons, 23, Cross-st., F London, E.C.

Johnson, Matthey & Co., 74 to 80, Hatton London, E.C.

***Pneumatic Bell Manufactur**

F.—Sonneries pneumatiques.

G.—Pneumatische Glocken.

Gent, J. T. & Co., Faraday Works, King R road, Leicester.

Koerber, J. A., 44, Frith-st., Soho-sq., Lo SIGNAL ENGINEERING CO., 18 Holborn, London, W.C.

TAYLOR, TUNNICLIFF & Co. (Chin wood, Hanley; London agent, Edwin Bartlett's-buildings, Holborn-circus. Zimdars, C. E., 327, Gray's-inn-rd., Lond

Porous Cell Manufacturers

F.—Vases poreux (Fab. de).

G.—Poröse Glocken für Batterien

Ashworth, G. L. & Bros., Broad-st., Stafford. *See index to advertisers.*

Bailey & Co., The Pottery, Fulham, Lond *See index to advertisers.*

Baughan, W. H. & Co., Charlbury, O; *index to advertisers.*

BOURNE, JOSEPH & SON, 6, St. Pan tion, Euston-road, N.W. Works Pottery, near Derby. *See index to ad*

Brayne, F., & Co., Bow Pottery, The lane, Bromley-by-Bow, London, E.

Cadiot, E. H., 6, Lime-st., London, E. DEFRIES, J., & SONS, 147, How London, E. *See index to advertisers.*

Maling, C. T., Ford Pottery, Newe Tyne. London sample rooms, 20, B buildings, Holborn-circus, London, E *index to advertisers.*

PRICE, SONS & CO., The Old Stonev tories, Bristol. *See index to advertis*

Cell Manufacturers—continued.

JAMES, & SONS, London Pottery, S.E., Established 1751. **POROUS CYLINDERS and PLATES** (white with or without glazed edges; porous specially hard (2nd and 3rd resistance), used by Postal Telegraph Department for aromatic batteries, or sufficiently soft to suit any battery; flat porous any size up to 15 in. square if required). Medals—Paris (Electrical), 1881, Philadelphia. Contractors to H. M. Post Office, Telegraphs, Indian and English Railways, &c. *See index to advertisers.*

WOOD & SONS, Etruria, Stoke-on-

Books of Electrical and Scientific Books, etc.

W. T. & Co., Bunhill-row, London. *See index to advertisers.*

W. C. & CO., Exeter-st., Strand, W.C. *See index to advertisers.*

W. P. & CO., MARSTON, SEARLE & STON, Crown-buildings, 188, Fleet-st., E.C. *See index to advertisers.*

W. Trench & Co., St. Paul's-build-
ing, Fleet-st., London, E.C. *See index to advertisers.*

Pulley Makers.

F.—Poulies (Fab. de).

G.—Riemscheiben—Fabr.

J. P. & Co., 4, Brabant-court, Philpot-ton, E.C.

V. G., Castle Engine Works, Stafford.

**W & SONS, ENGINEERS, BAT-
TERSEA, HERTSHIRE. MAKERS OF TURNED
CAST IRON PULLEYS, SHAFTING,
SOLE MAKERS OF ADDYMAN'S
TIGHT-FRICTION PULLEY.**

FIG. 5



**FAST & LOOSE PUL-
LEYS DISPENSED WITH.**

**1 CLUTCH PULLEY
ANSWERS FOR BOTH.**

**WHEN THE WEDGE
IS WITHDRAWN, THE
PULLEY RUNS LOOSE
ON THE SHAFT.**



FIG. 6

**ROAD BELTS ARE EMPLOYED IT IS INVALU-
ABLE. THE SHAFT CAN BE STOPPED WITHOUT
THE BELT.**

Pulley Makers—continued.

Clark, T. & C. & Co., Wolverhampton.

Crossley, George, Albion Machine Works, Cleck-heaton, Yorkshire.

Duncan Bros., 32, Queen Victoria-st., London, E.C. *See index to advertisers.*

Eades, W., Son & Co. (Eade's Patent), West-minster Works, Montgomery-st., Sparkbrook, Birmingham.

Goodwin, Arnold, 56, Sumner-st., London, S.E. Patent Convex wrought iron Pulleys.

Hall, J. & E., Dartford, Kent.

Harper & Co., Albion Iron Works, Aberdeen.

HUDSWELL, CLARKE & Co., Sole Makers of Rodgers' Patent Wrought-iron Pulleys.



The only all wrought-iron pulleys made. Over 37,000 in use. Railway Foundry, Leeds.

Imperial Steam Pump and Engineering Company Smethwick, Birmingham.

Joseph, Henry, The Manor-road Foundry, Leeds.

Mackie, J. J. & Co., Berks Iron Works, Reading.

Metcalf, T., Vulcan-st., Caledonian-st., Bradford.

Orme, Fredk. & Co., 9, St. Andrew's-st., Hol-born-viaduct, London, E.C. *See index to advertisers.*

Owens, S. & Co., 22, Whitefriars-st., Fleet-st., London, E.C.

Priest, Rowland, Cradley-heath, near Brierley-hill, Birmingham.

Proctor & Co., Stovenage, Hertfordshire.

Reading Iron Works Company, Limited, Reading, Berks.

SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., and Lambeth-hill, London, E.C. *See index to advertisers.*

TANGYE BROS., 35, Queen Victoria-st., London, E.C.

Thomas, John, 94, Pritchett-st., Birmingham.

Thompson, E., Rawdon, near Leeds.

Welch, Francis B. & Co., Manchester-chambers, Manchester.

Wilson, A., & Co., Vauxhall Iron Works, Wandsworth-road, S.W. *See index to advertisers.*

Pushes-Makers (Electric Bell).

F.—

G.—

- Baughan, W. H. & Co., Charlbury, Oxon. China, wood, ivory, brass. *See index to advertisers.*
 Franks, Robinson & Co., 76, Milton-st., Fore-st., London, E.C. Turners of electrical small work in vulcanite, ebonite, ivory, etc. *See index to advertisers.*
 Gent, J. T. & Co., Faraday Works, King Richard's-road, Leicester. *See index to advertisers.*
 Irvin and Sellers, Preston. Coil makers, ivory and wood turners. *See index to advertisers.*
 Martin, A., 54, Percival-st., London, E.C. *See index to advertisers.*
 Scott, Ronald A., 6, Pomona-place, Fulham, London, S.W.
 TAYLOR, TUNNICLIFF & CO. (China), Eastwood, Hanley; London agent, Edwin Fox, 9, Bartlett's-buildings, Holborn-circus, London, E.C.

Railway Signal Manufacturers.

F.—Signaux de Chemins de fer (Fab. de).

G.—Signale für Eisenbahnen.

- Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C.
 Dorset, W., High-st., Epsom, Surrey.
 Duncan Bros., 32, Queen Victoria-st., London, E.C.
 Easterbrook, Hannaford & Co., 4, Queen Anne's-gate, London, S.W.
 Electric Railway Signal Company, Stone Cross, Mansfield, Notts.
 Fowler, J. & Co., India-buildings, Edinburgh.
 Francis & Co. (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-garden, E.C., and Lawford-road, London, N.W.
 GARNHAM & CO., Sash-court, Wilson-st., London, E.C. *See index to advertisers.*
 Gloucester Wagon Company, Limited, Gloucester.
 Grieve & Gillespie, 81, Ormonde-st., Jarrow.
 Hartley & Arnoux Bros., California Wks., Stoke-on-Trent.
 Hick, Hargreaves & Co., Soho Iron Wks., Bolton.
 Isca Foundry Company, 10, Bush-lane, Cannon-st., London, E.C.
 King, J., Pinxton, Alfreton.
 McKenzie & Holland, Vulcan Iron Wks, Worcester.
 Messenger & Sons, 19, Broad-st., Birmingham.
 Oliver & Arrol, 29, Leith-walk, Edinburgh.
 Ransome's & Rapier, Waterside Iron Works, Ipswich.
 Saxby & Farmer, Canterbury-road, Kilburn, London, N.W.
 Stevens & Sons, 237-243, Southwark Bridge-road, London, S.E.
 Stevens, J. J. & Sons, 47, New City-rd., Glasgow.

Railway Signal Manufacturers—

- Sullivan, E. A., 20, Mawbey-road, Old road, London, S.E.
 Sykes, Wm. Robert, 84, Kirkwood-road, head, S.E.
 TYER & CO., Ashwin-st., Dalston-junction, London, E.
 Tweedy, J. & Co., Metcalfe-st., Carlisle.

Reflector and Shade Manufactu

F.—

G.—

- BLEWS, WILLIAM & SONS (Established 1850), 9 to 15, New Bartholomew-st., Birmingham. Manufacturers of Moltshanoff, Negliuny, Moscow, West Smithfield, London, E.C. Coal and Gas Companies.
 BURMAN, R. H., 73, Lionel-st., Birmingham. MANUFACTURER OF PLATED BOLIC AND OTHER REFLECTOR
 Davies & Co., 34, Warwick-lane, Newgate, London, E.C.
 Fox, T., 90, Hatton-garden, London, E.C.
 HOUGHTON, GEO. & SONS, 89, High-st., London, W.C.
 TAYLOR, TUNNICLIFF & CO. (China wood, Hanley. London agent, Edwin Fox, 9, Bartlett's-bldgs., Holborn-circus, London, E.C.)
 Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Stock kept and special made to order.

*** Rolling Mills and Rolled Metals.**

F.—Laminaires.

G.—Walzwerke.

- BOOTH, J. & CO., Sheepcote-st., Birmingham. Telephone, No. 311. *See index to advertisers.*
 CLIFFORD, CHARLES & SON, rollers, Fazeley-st., Birmingham.
 Hall-street Metal Rolling Company (J. I. manager), Hall-st. Works, Birmingham.
 PHOSPHOR BRONZE COMPANY, 11, 87, Sumner-st., Southwark-st., London.
 Wire and sheet mills, Bagot-st., Birmingham.
 Sole makers, under patents, of 1861 Bronze and Silicon Bronze.
 TAYLER, D. F. & CO., New Hall, George-st.-Parade, Birmingham.

Schools of Telegraphy and Electrical Engineering.

F.—

G.—

- City & Guilds of London Institute, College, London, E.C.
 City & Guilds of London Technical College, Tabernacle-row, London, E.C.
 City of London College, J. C. Fell, M.A., White-st., Finsbury, London, E.C.

s of Telegraphy and Electrical Engineering—continued.

f Electric Light & Telephone Engineer-
est Worthing.

f Science & Arts (Prof. A. Jamieson),
w.

. Engineering College, West Worthing,
t and non-resident pupils. Principal,
ackthwaite.

I's Electrical Engineering College,
on, Hugh Erat, B. Sc., F.C.S.), 2, Red
l., London, W.C.

Andrew, C.E., F.R.S.E., &c., *principal*,
of Science and Arts, Teacher of Elec-
engineering, 38, Bath-st., Glasgow.

9, Railway-approach, London-bridge,
, S.E.

ollege School (Prof. W. G. Adams,
electrician), 162, Strand, London, W.C.
ollege, Manchester.

egraph Schools, Moorgate-st.-buildings,
ph-st., London, E.C.

Telegraphy & Electrical Engineering,
ices-st., Hanover-sq., London, W.

y College, Bristol.

y College (Prof. W. Garnett), Notting-

don Schools of Telegraphy & Electrical
ring, 101, Uxbridge-rd., London, W.
c to advertisers.

entific Apparatus Makers.

—*Appareils scientifiques (Fab. de).*

—*Wissenschaftliche Instrumente.*

Co., 12, White Hart-st., Catherine-
don, W.C.

E. & Co., 34, Maiden-lane, Covent-
London, W.C.

Emmott & Co., Northern Telegraph
Halifax; and 55 and 56, Southampton-
s, Chancery-lane, London, W.C. *See*
advertisers.

, L., 147, Holborn, London, E.C.

& Co., Sash-court, Wilson-st., Fins-
ndon, E.C. *See index to advertisers.*

N ELECTRIC WORKS, Narrow
, Bristol.

.A., 44, Frith-st., Soho-sq., London, W.

LD, J. T., 41, QUEEN VICTORIA-
NDON, E.C. MAKER AND IM-
R OF EVERY DESCRIPTION OF
TIFIC APPARATUS FOR THE
SES OF DEMONSTRATION AND
RCH, ALSO MAKER OF SPECI-
S IN ELECTRICAL APPARATUS,

CO., 65, Barbican, London, E.C.

& Sons, 86, Canonbury-rd., London, N.

*** Screw, Stock, and Die Tap Makers.**

F.—

G.—

BLEWS, WILLIAM & SONS (Estab. 1782),
9 to 15, New Bartholomew-st., Birmingham,
Dom Moltahanoff, Negliuny, Moscow, and 38,
West Smithfield, London, E.C. Contractors
to the Cities of Moscow, Mexico, San Paulo,
&c. Gas Companies.

CHURCHILL, CHARLES & CO., 21, Cross-
st., Finsbury, London, E.C. (American).

Orme, Frederick & Co., 9, St. Andrew's-st.,
Holborn-viaduct, London, E.C.

SELIG, SONNENTHAL & CO., 85, Queen-
Victoria-st., and Lambeth-hill, London, E.C.

Screw, Terminal, & Small Detached Accessories Manufacturers.

F.—*Vis, Bornes, et Petits accessoires detachés.*

G.—*Schrauben und sonstige Artikel für Elektriker.*

ARMSTRONG, STEVENS & CO., 15, Whittall-
st., Birmingham.

Baughan, W. H. & Co., Charlbury, Oxon.

Blakey, Emmott & Co., Northern Telegraph
Works, Halifax; and 55 and 56, Southampton-
buildings, Chancery-lane, London, W.C.

BLEWS, WILLIAM & SONS (Estab. 1782),
9 to 15, New Bartholomew-st., Birmingham,
Dom Moltahanoff, Negliuny, Moscow, and 38,
West Smithfield, London, E.C. Contractors
to the Cities of Moscow, Mexico, San Paulo,
&c. Gas Companies.

DAVIS & TIMMINS, Bowling-green-lane,
London, E.C. *See index to advertisers.*

LEVY, ARMAND, electrical sundriesman, 252,
Goswell-rd., London, E.C., and 42, Rue de
Ruysbruck, Brussels. All classes of screws,
terminals, and couplings in stock. Sole agents
for Barriere & Co., Paris. Screw cutting
machines, brass and iron drawn rods, switches,
etc., etc. *See index to advertisers.*

Lysaght, Jn., 28, Gracechurch-st., London, E.C.

MATTHEWS, W. H., 22, Charterhouse-sq.,
London, E.C. Screws and small turned wares
of all kinds. Screw Presses, Fly Presses, and
Press Tools of all descriptions made and re-
paired. Cutting and Stamping done for the
trade.

MAYFIELD, J. T., 41, Queen Victoria-st.,
London, E.C. Clamps, Binding Screws and
Terminals of every description.

SELIG, SONNENTHAL & CO., 85, Queen
Victoria-st., and Lambeth-hill, London, E.C.
Stevens, F. A., 17, Duke-st., London, E.C. *See*
index to advertisers.

Vulcan Manufacturing Company, Vulcan Works,
Rocliffe-st., City Garden-row, London, N.
See index to advertisers.

Shackle Makers.

F.—Isoloirs électriques.

G.—Isolator-Fabriken.

Ashworth, G. L., & Bros., Broad-st., Hanley, Stafford. *See index to advertisers.*

Crystal Porcelain Pottery Company, Limited, 23, St. Swithin's-lane, E.C. Works, Cobridge, Stoke-on-Trent. *See index to advertisers.*

MALING, C. T., Ford Pottery, Newcastle-on-Tyne. London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C. *See index to advertisers.*

Pearson, James, Whittington Moor Potteries, near Chesterfield. London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C.

Walker, Sidney F. & Oliver, 195, Severn-rd., Cardiff, and at Nottingham.

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

Shafting Manufacturers

F.—Transmissions (Fab. de).

G.—Schäften-Fabriken.

Askham Bros. & Wilson, Limited, Yorkshire Steel Works, Napier-st., Sheffield.

Carver, James. Works, Nottingham. A. E. Ann, agent, 3, Broad-st.-bldgs., London, E.C.

Hind, H. & Son, 62, Blackfriars-road, London, S.E., and at Nottingham.

Kirkstall Forge Company, Leeds.

Orme, Frederick & Co., 9, St. Andrew's-st., Holborn-viaduct, London, E.C.

Owens, S. & Co., 22, Whitefriars-st., Fleet-st., London, E.C.

Sagar, J. & Co., Bowling-green Iron Works, Halifax.

SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., and Lambeth-hill, London, E.C.

Snowball & Co., Crown Bridges Side, Newcastle-on-Tyne.

Taylor & Challen, 99, Constitution-hill, Birmingham.

TAYLOR, GEO. CROSLAND, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*

Thompson, E., Rawdon, near Leeds.

Victoria Engineering Company, Brewery-st., Stockport.

Yates, J. & Co., Sheaf Wrks., Hunslet-rd., Leeds.

Ships Telegraph—Makers of.

F.—Télégraphes pour navires.

G.—Schiffs-Telegraphen.

Apps, A., 433, Strand, London, W.C.

Duncan Bros., 32, Queen Victoria-st., London, E.C.

France & Morgan, 79 to 91, Warroch-st., Anderston, Glasgow.

Hannan & Buchanan, 75, Robertson-st., Glasgow.

Henderson, Chas. & Co., 9, York-buildings, York-st., Glasgow.

Koerber, J. A., 44, Frith-street, Soho-square, London, W.

* Silk Spinners.

F.—

G.—

Rickard, Wm., Ashbourne-rd. Mills, Derbydon agent, Edwin Holloway, 2, Gutta-3

Societies—Learned and Scientific

F.—Sociétés Savantes et Scientifiques

G.—Wissenschaftliche Vereine.

Aëronautical Society of Great Britain, 1 stone-hill, London, E.

British Association for the Advancement of Science, 22, Albemarle-st., London, W.

Chemical Society, Burlington-house, Piccadilly, London, W.

Civil & Mechanical Engineers' Society, 1 minster-chambers, Victoria-st., London, S.W.

Institution of Civil Engineers, 25, George-st., London, S.W.

INSTITUTION OF MECHANICAL ENGINEERS, 10, Victoria-chambers, Victoria-st., London, S.W.

Meteorological Society, 30, Great George-st., London, S.W.

Royal Microscopical Society, King's College, Strand, London, W.C.

Royal Society, Burlington-house, Piccadilly, London, W.

Society of Arts, 18, John-st., Adelphi, London, W.C.

Society of Telegraph Engineers and Electricians, 4, The Sanctuary, London, S.W.

Solder Manufacturers and Merchants

F.—

G.—

Osborne & Co., 11, Great Garden-st., chapel-rd., London, E. *See index to advertisers.*

Thickett, J., 47, 49 and 51, Charles-st., S.W.

Speed Indicator Makers.

F.—Compteurs de Vitesse (Fab. de)

G.—Apparat zum Anzeigen der Geschwindigkeit

Apps, A., 433, Strand, London, W.C.

Carlaw, David, 54 to 56, Ropework-lane, Glasgow.

Dempster, Moore & Co., 49, Robertson-st., Glasgow.

Elliott Brothers, 101, St. Martin's-lane, Strand, London, W.C. (Buss' Tachymeter).

Foster, E. & Son, Central Works, Warrington, Lancashire.

Groves, W., 89, Bolsover-st., Fitzroy-st., London, W.C.

Hannan & Buchanan, 75, Robertson-st., Glasgow. (Sole makers of Richards' Improved Patent Speed Indicator.)

Harding, T. H. & Son, Tower Works, London, E.C.

McNaught, W. & Son, 26, Robertson-st., Glasgow.

OPPERMANN BROS., Brewhouse-yard, St. John's-st., London, E.C.

Orme, Fredk. & Co., 9, St. Andrew's-st., Holborn-viaduct, London, E.C.

Schaffer & Budenberg, 202, Hope-st., Glasgow.

SELIG, SONNENTHAL & CO., 85, Victoria-st., and Lambeth-hill, London, S.W.

Spelter Manufacturers.

F.—Zinc (Fab. de).
G.—Spiauter—Fabr.
 I, W., 60, Gracechurch-st., London,
 S.E.
 Rothsay-st., Bermondsey New-road,
 S.E.
 & Co., Limited, Gt. Clyde-st., Glasgow.
 J. & Co., 9, Oswald-st., Glasgow.
 T. B. & Co., 8, Picardy-place, Edin-
 c Company, Swansea.
 igh D. & Co., 110, Cannon-st., Lon-
 .
 . Henry & Co., 23, Abchurch-lane,
 E.C.
 pelter Co., High-st. East, Sunderland.
 Rogers, Michell & Co., City-buildings,
 Hall-st., Liverpool.
 & Son, The Spelter Works, Ruabon,
 Wales.
 off, Louis, 79, Mark-la., London, E.C.
 pelter Company, Lower Greenhill, Stir-
 e.
 : Mortlock, 198, Upper Thames-st.,
 E.C.
 Edmund Van der, 11, Queen Victoria-
 don, E.C.
 & Co., Mary-hill, Glasgow.
 /ale Spelter Company, Swansea.
 ISPELTER COMPANY, LIMITED,
 ansea.
 sons, Margam & Hafod Wks., Swansea.

Spring Makers for Pushes.

ONG, STEVENS & CO., 15, Whit-
 Birmingham.
 W. H. & Co., Chalbury, Oxon.
 silver and plated brass.
 F., 30, Noble-st., Goswell-road, Lon-
 C.
 SON, 51 to 54, Charlotte-st., B'gham.
 onald A., 6, Pomona-place, Fulham,
 S.W.

Steam Packing Manufacturers.

India Rubber Steam Packing Manufacturers.
F.—Garnitures à vapeur (Fab. de).
F.—Liederungsdeckel-Fabrikanten.
 Vale Rubber Company, Palmerston-st.,
 s, Manchester.
 , Abbott & Anderson, 9 & 10, High-st.,
 .
 'acking & Rubber Company, 77, Grace-
 st., London, E.C.
 m, 118, Southwark-st., London, S.E.
See to advertisers.

Steam Packing Manufacturers—continued.

BINNEY & SON, 62, Queen Victoria-st., E.C.,
 and Catherine-st., City-road, London, E.C.;
 22, Wellington-st., Leeds; 50, West Howard-
 st., Glasgow; and 63, Broad-st., Birmingham.
See index to advertisers.
 Boardman Bros., Sharp-st. Mill, Rochdale-rd.,
 Manchester.
 Clive & Co., Suffolk-grove, Southwark, London,
 Davies, R. & Son, 17 & 19, Fleming-sq. B'kburn.
 Demster, Moore & Co., 49, Robertson-st., Glasgow.
 Foster & Williams, 87, Grange-road, Bermond-
 sey, S.E.
 GEHRCKENS, C. K., 18, Jewry-st., London,
 E.C.
 Golding, Bexfield & Co., 1, Lavers-road, Stoke
 Newington, N.
 Hailwood, J. T., Ramsay-st., Rochdale.
 Hall, Thomas Henry, 3, Gosta-green, Aston-st.,
 Birmingham.
 Hellewell Rubber Company, 15-21, Corporation-
 st., Manchester.
 Indestructible Packing Company, 9, Lea-place,
 East India Dock-road, London, E.
 Ironmonger, Thomas & Co., 63, Bishopsgate-st.
 Within, London, E.C.
 Irwell India Rubber & Gutta Percha Company,
 93, Mitchell-street, Glasgow.
 Liverpool Rubber Company, 292, Vauxhall-road,
 Liverpool.
 McDowell, Robt. Wm. Henry, 13, Bow-lane,
 London, E.C.
 Macintosh, C. & Co., Cambridge-st., Manchester.
 Mead, Fredk. M. & Co., 323n, Kennington-road,
 London, S.E.
 Miles, John & Co., Albert Works, Bolton,
 Lancashire.
 Morgan & Son, 217, Blackfriars-road, S.E.;
 warehouse, 13, Charles-st., London, S.E.
 Platt, W. H. & Co., Stamford-st., Ashton-under-
 Lyne.
 Sheath Bros., 89, City-road, London, E.C. *See*
index to advertisers.
 Statham, H. & Co., 9, 10 & 11, Corporation-st.,
 Manchester.
 Terrell, Wm. & Sons, Limited, Welsh-back and
 Canon's-marsh, Bristol.
 Turner, T. B. & Co., Scotia Mills, Gerard-st.,
 Derby.
 Warner & Koenig, 23, Addle-st., London, E.C.
 WILCOX, W. H. & CO., 36, Southwark-st.,
 London, S.E.
 Wotherspoon, J. & Sons, 97, Wellington-st.,
 Glasgow.

Stranding Machine Manufacturers.

F.—Machines à câbler le fil (Fab. de).
G.—Drahtlitztenmaschinen—Fabr.
 BARRACLOUGH, T., & CO., LIMITED,
 offices, 8, King-st.; works, Whiteley-st.,
 Rochdale-rd., Manchester. *See index to ad-*
vertisers.
 MOFFATT, ALEXANDER & CO., 26, College-
 st., Dowgate-hill, London, E.C.

Stranding Machine Manufrs.—continued.

NORTH BRITISH RUBBER COMPANY, LIMITED. Warehouses: 57, Moorgate-st., London, E.C.; 6, Charlotte-st., Mosley-st., Manchester; & 13 & 15, Oswald-st., Glasgow; works, Castle Mills, Edinburgh.



Sulphate of Alumina Manufacturers.

F.—Sulfate d' Alumine.

G.—Schwefelsäure Thonerde.

Pochin, Henry, Davis & Co., Wellington-quay, Newcastle.

Sulphate of Ammonia Manufacturers.

F.—Sulfate d'Ammoniaque (Fab. de).

G.—Schwefelsäures Ammonium.

Burt, Boulton & Haywood, 64, Cannon-st., London, E.C.

Dickinson, Arthur J., Surrey Canal, Deptford, London, S.E.

Lanark Oil Co., Ltd., 58, George-st., Edinburgh.

Lockyer, J. & Son, 36, Mark-lane, London, E.C.

Sadler, Saml., A., 85, Gracechurch-st., London, E.C.

Torr, George, Trundley's-lane, Lower-road, Deptford, London, S.E.

Sulphate of Copper Manufacturers.

F.—Sulfate de Cuivre (Fab. de).

G.—Kupfervitriol.

Christopherson, Clifford & Co. (agents), 17, Great Tower-st., London, E.C.

Macclesfield Patent Sulphate of Copper Company (Saml. Orme, manager), The Moss, Macclesfield.

Orr, J. B., 46, Cannon-st., London, E.C.

*** Sulphur Manufacturers and Refiners.**

F.—Soufre (Raffineurs de).

G.—Schwefel-Läuterer.

Scott & Co., Marsh-gate-lane, Stratford, London, E.

Sulphuric Acid Manufacturers.

F.—Acide sulfurique (Fab. d').

G.—Schwefelsäure.

Beckles, S. H., & Co., 6, Lime-st.-square, London, E.C.

Hills, Frank C., & Co., 17, Philpot-lane, London, E.C.

London Chemical Company, Bow Bridge-wharf, London, E.

Miller & Johnson, 36, Mark-lane, London, E.C.

Scott & Co., Marsh-gate-lane, Stratford, London, E.

Sulphurous Acid Manufacturer

F.—Acide Sulfureux (Fab. d').

G.—Schwefelige Säure.

Bell, Thomas, & Co., Vitriol Works, Stn London, E.

Houlder, Wm., Son & Co., 9, Mincing London, E.C.

Scott & Co., Marsh-gate-lane, Stratford, London, E.

Switch Board Manufacturers.

F.—

G.—

Blakey, Emmott & Co., Northern Tel Works, Halifax; and 55 and 56, Southam buildings, Chancery-lane, London, W.C.

Koerber, J. A., 44, Frith-st., Soho London, W.

WEEDON & IRISH, 30, Borough-road, derland.

Whalley, A., 71, Fleming-square, Black

*** Tallow Merchants.**

F.—Suif (Marchands de).

G.—Talg-Händler.

MORGAN & SON, 217, Blackfriars-road, S.E.; warehouse, 13, Charles-st., S.E. See index to advertisers.

ROSE, SIR W. A., & CO., 66, Upper T st., London, E.C. Refiners of pure c

tallow.

Taping Machine Manufacture

F.—Machines à envelopper le fil par des v (Fab. de).

G.—Bandüberziehmaschinen für Drähte

BARRACLOUGH, T., & CO., LIM offices, 8, King-st., Manchester;

Whiteley-st., Rochdale-rd., Manchester index to advertisers.

Orme, Fredk., & Co., 9, St. Andre Holborn-viaduct, London, E.C.

Teachers of Telegraphy and Ele Engineering.

(See schools.)

Telegraph Agents.

F.—Agentes télégraphiques.

G.—Telegramm-Agenten.

Francis, F. R., C.E., Eagle Telegraph Hatton-garden, London, E.C., & Oxford

Lawford-rd., N.W.

Powell, Hector Thomas, 9, Fenchurch London, E.C.

McLean's Telegraphic News Exchange Throgmorton-st., London, E.C.

Stuart, R. (American), 11, Manchester-bu Liverpool.

Watson Anglo-Indian & General T Agency, 27, Leadenhall-st., London, E

**Telegraph Cable Making Machine
Manufacturers.**

machines à fabriquer le Câble télégraphique.
maschinen für Telegraphen-Kabel—Fabr.

DOUGH, T. & CO., LIM. Offices,
-st., Manchester; works, Whiteley-st.,
-rd., Manchester. *See index to ad-*

. P. & Co., Yiewaly-wharf, West
East Surrey Foundry, Pitlake, Croydon,

ros., 32, Queen Victoria-st., London,

Phillips, 14, Union-st., Old Broad-st.,
d Victoria Works, Charlton, London,
see index to advertisers.

lexander & Co., 26, College-st., Dow-
, London, E.C. *See index to advertisers.*
tephens, James Works, Queen's-road,
a, S.W.

ndry Co., Lim., Newton-le-Willows.
h & Bulmer, Back-lane, Gallowgate,
le-on-Tyne.

Telegraph Code Ciphers.

F.—Chiffres pour Télégraphie.

Chiffren-Codex für Telegraphisten.

avid & Son, 129, Buchanan-st.,

& Brinkerhoff, American agents for
Universal Electrical Directory, and
and Garstin's Telegraphic Cipher Code
19, East 18th-st., New York, U.S.A.
to advertisers.

E., c/o Wm. Dawson & Sons, 121,
st., London, E.C.

Adams & Co., 32, Paternoster-row,
E.C.

R., 14a, Exchange-bldgs., Liverpool.
Howe, Princess-st., Manchester.

11, Manchester-buildings, Liverpool.

AWS, D., 79½, Gracechurch-st.,
E.C.

Telegraph Companies.

—Télégraphes (Compagnies de).

chaften zur Beförderung von Telegramme.

Telegraph & Cable Company, Lim.,
ange-buildings, Liverpool.

erican, Limited. General Office, 26,
rd-st., London, E.C.

Submarine, Limited, 8, Great Win-
st., London, E.C.

, Française de Télégraphie de Paris à
rk, 100 & 101, Gresham-house, London,
nd 24, Royal Exch., Old Broad-st.,
E.C.

Telegraph Companies—continued.

Cuba Submarine, Lim., 61, Old Broad-st., London,
E.C.

Direct Spanish, Lim., Leadenhall-buildings,
Leadenhall-st., London, E.C.

Direct United States Cable Co., Lim. General
offices, 52, Old Broad-st., London, E.C.

Eastern Extension Australasia & China, Lim.,
66, Old Broad-st., London, E.C.

Eastern & South African Telegraph Co., 66, Old
Broad-st., London, E.C.

Eastern Telegraph Co., 66, Old Broad-st., London,
E.C. Geo. Draper, Secretary.

Electric News Telegraph Company, Limited.
Chief office, 4, Ludgate-circus, London, E.C.,
and at Stock Exchange, 4, Warnford-court,
London, E.C.

Exchange, Lim., Bartholomew-house, Batholo-
mew-lane, London, E.C.

German Union Telegraph & Trust Co., Lim.,
66, Old Broad-st., London, E.C.

Globe Telegraph & Trust Co., Lim., 66, Old
Broad-st., London, E.C.

Government Indo-European Telegraph, 49 & 50,
Parliament-st., London, W.

GREAT NORTHERN TELEGRAPH CO. OF
COPENHAGEN. Hermann Gustave Erichsen,
representative; Frederick Carl Christian
Nielsen, manager. 119, Bishopsgate-st.
Within, London, E.C.

Indo-European, Lim., 18, Old Broad-st., London,
E.C., and 9, East India-avenue, London, E.C.

Jersey & Guernsey Co., Limited, 26, Budget-row,
Cannon-st., London, E.C.

London Platino-Brazilian, Lim., 66, Old Broad-
st., London, E.C.

Mediterranean Extension, Limited (E. Tombs,
secretary), 158, Gresham-house, Old Broad-
st., London, E.C.

Montevidean & Brazilian Co., Lim., 9, King's
Arms-yard, Coleman-st., London, E.C.

North Atlantic Cable Co., Limited, 109, Fen-
church-st., London, E.C.

Postal Telegraph Stores, Gloucester-rd., Regent's-
park, London, N.W.

Reuter's Telegram Co., Limited, 24, Old Jewry,
London, E.C.

Spanish National Submarine Telegraph Company,
Limited, 6, Old Jewry, London, E.C.

Submarine Cable Trust, 66, Old Broad-st.,
London, E.C.

Submarine Telegraph Co., 2, Throgmorton-av.,
London, E.C.

WEST COAST OF AMERICA, LIM., 98,
CANNON-ST., LONDON, E.C.

West India & Panama, Lim., Dashwood-house,
9, New Broad-st., London, E.C.

Western & Brazilian, Lim, 19, Gt. Winchester-
st., London, E.C.

Western Union Telegraph Co., Lessees of The
American Telegraph & Cable Co., 211 & 214,
Gresham-house, Old Broad-st., London, E.C.,
and 21, Royal Exchange, London, E.C.

Telegraph Engineers of Railway Companies (Official).

F.—Télégraphes (Ingenieurs de chemins de fer).

G.—Telegraphenbau—Eisenbahn-Ingenieure,

- Clements, A. F., North British, Edinburgh.
 Dunn, A. S., telegraph department, Caledonian Railway Co., Glasgow, N.B.
 Fletcher, John Wm. London & North-Western, General Offices: Euston Station, Euston-grove, London, N.W.
 Gilbert, E., Dundee & Arbroath Joint Railway Co., Commercial-st., Dundee.
 Graves, A. North-Eastern—City Office: Great Eastern Station, Liverpool-st., London, E.C.
 Houghton, — London, Brighton & South Coast. Offices: London Bridge Station, S.E.
 Langdon, W.C., telegraph department, Midland Railway, Derby.
 Leonard, William, Superintendent South Eastern Railway Company, Tunbridge, Kent.
 Neale, J. North Staffordshire Railway, Stoke-on-Trent.
 Sach, H., Great Eastern. Head Offices: Liverpool-st., London, E.C.

Telegraph Instrument Manufacturers.

F.—Instrumentes télégraphiques (Fab. de).

G.—Telegraphische Instrumente—Fabr.

- Apps, A., 433, Strand, London, W.C.
 Bailey, W. H. & Co., Essex-st., Salford, Manchester.
 Bassano & Slater, Traffic-st., Derby. *See index to advertisers.*
 Beech, George, 14, Norfolk-rd., Dalston-la., London, N. *See index to advertisers.*
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C.
 CHADBURN & SON, Telegraph Works, Waterloo-rd., Liverpool.
 CLARK (L), MUIRHEAD & CO., 23 Regency-st., London, S.W.
 Driver, George, 27, Warren-st., Euston-rd., London, N.W.
 Elliott Bros., 449, Strand, London, W.C., and 101, St. Martin's-la., London, W.C.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., & Lawford-rd., London, N.W.
 Garnham & Co., Sash-ct., Wilson-st., London, E.C. *See index to advertisers.*
 Griffith & Co., 4, Queen Anne's-gate, London, S.W. Works, Reading.
 GROVES, W., 89, Bolsover-st., Fitzroy-sq., London, W.
 Haines, Montpelier-ter., Cheltenham.
 Hannan & Buchanan, 75, Robertson-st., Glasgow.
 Henley's (W. T.), Telegraph Works Co., Lim., 8, Drapers'-gardens, London, E.C. *See index to advertisers.*
 Hornsey, Wm., 17, Bernard-st., Southampton.
 Johnson & Phillips, 14, Union-court, Old Broad-st., London, E.C., and Victoria Works, Charlton, S.E.

Telegraph Instrument Manufs.

- Koerber, J. A., 44, Frith-st. Soho-sq., W.
 Lainchbury, A. G., 65, East-rd., London, N.
 Mason Bros. & Co., 17, Hope-st., Glasg
 Miller, Richard, 54, St. Enoch-sq., Glas
 PATERSON & COOPER, 76, Little London, E.C. *See index to advertisers*
 Phillips, E., 63, Wilson-st., Derby.
 Reid Bros., 12, Wharf-rd., City-rd., Lo
 Sax, Julius, 108, Gt. Russell-st., Blo
 and Bedford Telegraph Works, 8 Bedford-sq., London, W.C.
 Scottish Telegraph Construction & Mah Co., North Area, Royal Exchange, Gl
 Siemens Bros. & Co., Limited, 12, Queen gate, London, S.W.
 Simmons, C. J., 56, Levertton-st., Londo
See index to advertisers.
 STIFF, JAMES, & SONS, High-st., I London, S.E.
 Telegraph Improvement Company, Lim Austin-friars, London, E.C.
 Theiler, M., & Sons, 86, Canonbu London, N.
 Tyler & Co., Ashwin-st., Dalston J London, E.
 Volk, Magnus, 25, Ditchling-rise, Brigh
 Warden, W. M., & Co., 27, Gt. Ge London, S.W.
 Whalley, A., 71, Fleming-square, Blac
 White, James, 241, Sauchiehall-st., Gla
 Whitley Partners, Limited, Hunslet-rd.

Telegraph Iron & Steel Buoys

F.—Bouées.

G.—Bojen für telegrafische Käbel

- Duckitt & Berry, Brunswick Graving Liverpool.
 JOHNSON & PHILLIPS, 14, Uni Old Broad-st., London, E.C., and Works, Charlton, London, S.E.
 Jukes, Coulson, Stokes & Co., 13, C lane, London, E.C.
 Siemens Bros. & Co., Limited, 12, Queen gate, London, S.W.

Telegraph Paper Makers

F.—Papier télégraphique (Fab. de)

G.—Papierfabriken für Telegraph

- Milchsack, C. & Co., 2, Coleman-st.-l London, E.C.
 SABEL, MAX, 2, Coleman-st.-buildin don, E.C.
 Spalding, & Hodge, 40 and 41, 1 Hatton-garden, London, E.C.
 Waterlow & Sons, Limited, 95, Lond London, E.C.
 Zuber, Rieder & Co., 3, Budge-row, Lond

Telegraph Stores.

F.—Appareils télégraphiques.

I.—Telegraphische apparate.

10a, Victoria-buildings, Victoria-hester.

& Son, All Saints' Works, Derby.

VIN & CO., LIMITED, offices, 5, inchester-st., London, E.C., works, London, E.

Co., Sash-ct., Wilson-st., Finsbury, E.C. *See index to advertisers.*

I & CO., 4, Queen Anne's-gate, S.W., works, Reading. *See index to*

S. W. T., TELEGRAPH WORKS Y, LIMITED, offices, 8, Drapers'-London, E.C. *See index to advertisers.* later, 28, Hamilton-st., Birkenhead. lclaby.

dney F. & Oliver, 195, Severn-rd., nd at Nottingham.

lectric Company, 59, Moorgate-st., E.C.

Telegraph and Telephone Cable Manufacturers.

(See cable manufacturers.)

Telegraph and Telephone Instrument Case Manufacturers.

F.—Les pour Instruments télégraphiques.

I.—Geräte für telegraphische Instrumente.

H. H., & Co., Charlbury, Oxon. *See*

advertisers. smott & Co., Northern Telegraph alifax; and 55 and 56, Southampton-Chancery-lane, London, W.C. *See*

advertisers. hn Fk., 39, Lever-st., London, E.C.

G. WILLIAM M., 36, Percival-st. E.C. Lock and Block single needle

der perforated photometer and tele-

es. By appointment to Her Majesty's nt and the principal Railway and

Companies. The cheapest house in for the manufacture of Telegraphic

ork by hand and machinery. Prize ris 1881, the only medal awarded for c cabinet work. *See index to adver-*

Co., Sash-ct., Wilson-st, Finsbury, E.C. *See index to advertisers.*

. & Co., Faraday Works, King road, Leicester. *See index to adver-*

INDIA-RUBBER COMB COM- 18, London-wall, London, E.C. *See*

advertisers. 138, London-wall, London, E.C.

EDERICK & CO., 11, Clerkenwell- on, E.C. *See index to advertisers.*

Telegraph & Telephone Pole Manufacturers (Iron).

F.—Poteaux télégraphiques en fer.

G.—Eisene Telegraphen-Strangen.

ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.

Atlas Iron Works Company, Litchurch, Derby. Badger, John & Co., Stephenson-st., Stephenson-place, Birmingham.

BLEWS, WM., & SONS (Etabd. 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the cities of Moscow, Mexico, San Paulo, &c. Gas companies.

Brotherton, J. & Co., Monmore-green, Wolverhampton.

Broughton, W. H. & Co., Alpha Works, Smethwick, Birmingham.

CLARK, L., MUIRHEAD & Co., 23, Regency-st., London, S.W.

Forth Bank Foundry Company, Bo'ness, Linlithgowshire.

Fuller, John C. & Son, 547, Old Ford-road, Bow, London, E., and 47, Finsbury-pavement, London, E.C.

Hardy & Padmore, Blockhouse, Worcester.

Johnson & Phillips, 14, Union-court, Old Broadstreet, London, E.C., and Victoria Works, Charlton, London, S.E. *See index to advertisers.*

Morton, F., & Co., Naylor-st., Liverpool.

NORMAN & SON, 217 to 223, Argyle-street, Glasgow, and at Barrow-in-Furness.

Reid Bros., 12, Wharf-road, City-road, London, N.

Russell, J. & Sons, Limited, Crown Tube Works, Wednesbury.

Spencer, James E. & Samuel, 3, Queen-street-place, London, E.C.

Stewart, A. & J., Limited, 41, Oswald-st., Glasgow.

Taunton, R. H., & Hayward, Heneage-st., Birmingham.

Warden, J. & Sons, 13, Broad-st., Birmingham.

Whitehouse & Co., Globe Tube Works, Wednesbury.

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

Telegraph & Telephone Wire Coverers.

(See wire coverers.)

Telegraph Works.

F.—Usines télégraphiques.

G.—Telegraphen-Fabriken.

Ash, J., & Sons, Rea-st. South, Birmingham.

Bassano & Slater, Traffic-st., Derby. *See index to advertisers.*

Callender's Bitumen Telegraph & Waterproof Co., 101, Leadenhall-st., London, E.C.

CLARK, L., MUIRHEAD & CO., 23, Regency-st., London, S.W.

Telegraph Works—continued.

Davis, John & Son, All Saints' Works, Derby.
 Felten & Guillaume (W. F. Dennis & Co., agents), 101, Leadenhall-st., London, E.C.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-road, London, N.W.
 HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C.
 Hooper's Telegraph and India Rubber Works, 31, Lombard-st., London, E.C.
 Johnson & Phillips, 14, Union-court, Old Broad-st., London, E.C., & Victoria Works, Charlton-st., S.E.
 JOHNSON, R., & NEPHEW, 8, Great Winchester-st., London, E.C.
 Lewis, J. Slater, 28, Hamilton-st., Birkenhead. Telegraph Insulator Works, Helsby.
 PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*
 REID BROS, 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*
 Sax, Julius, 108, Great Russell-st., Bloomsbury, and Bedford Telegraph Works, Store-st., Bedford-sq., London, W.C.
 Siemens Bros. & Co., Limited, 12, Queen Anne's gate, London, S.W.
 TAYLOR, GEO. CROSLAND, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*
 Telegraph Construction and Maintenance Co., Limited, 38, Old Broad-st., London, E.C.
 Theiler, M. & Sons, 86, Canonbury-rd., London, N.
 Tyer & Co., Ashwin-st., Dalson-junction, London, E.

Telephone Apparatus Makers.

F.—Appareils téléphoniques (Fab. d').

G.—Telephon-Apparate (Fab.).

Apps, A., 433, Strand, London, W.C.
 Bassano & Slater, Traffic-st., Derby. *See index to advertisers.*
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
 Britannia Rubber & Kamptulicon Co., 32, Cannon-st., London, E.C.
 CUTTING, R. C., & CO., Wardrobe-chambers-Queen Victoria-st., London, E.C.
 Dale, H. & E. J., 4, Little Britain, E.C., and 26, Ludgate-hill, London, E.C. *See index to advertisers.*
 Davis, Langdon & Co., 110, Cannon-st., London, E.C.
 Elliott Brothers, 101, St. Martin's-lane, and 449, Strand, London, W.C.
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-road, London, N.W.

Telephone Apparatus Makers—

Gent, J. T. & Co., Faraday Works Richard's-rd., Leicester. *See index to advertisers.*
 HARBURG INDIA RUBBER COMPANY, 138, London-wall, London, E.
 Harrison, Cox-Walker & Co., 4, Hi Dalington.
 LEVY, ARMAND, electrical sundries Goswell-rd., London, E.C., and 42, Ruybroeck, Brussels. Vulcanite rod tube cases, permanent magnets, carb screws, &c. *See index to advertisers.*
 Nelson, James, & Sons, 47, Briggate, Le Northern District Telephone Company, Sunderland. Switch-boards for co subscribers to an Exchange.
 PATERSON & COOPER, 76, Little London, E.C. *See index to advertisers.*
 SAX, JULIUS, 108, Gt. Russell-st., bury, and Bedford Telegraph Works st., Bedford-sq., W.C.
 Single Wire Multiple Telephone Signal C Limited, 11, Old Broad-st., London, 1
 Spence, J. Berger & Co., 31, Lom London, E.C. *See index to advertisers.*
 Strangeway, H. B. T., 2, Cambridge gardens, Twickenham.
 Theiler, M. & Sons, 86, Canonbu London, N.
 Vulcan Manufacturing Company, Vulcar Rodcliffe-st., City-garden-row, London
 Walker, Sidney F. & Oliver, 195, Se Cardiff, and at Nottingham.
 WEEDON & IRISH, 30, Borough-rd derland.
 Western Electric Company, 59, Moor London, E.C.
 WHALLEY A., 71, Fleming-sq., Black Winter F., 138, London-wall, London, 1

Telephone Companies.

F.—Compagnies de Téléphones.

G.—Telephon-Compagnien.

American West Coast, Limited, 4, New st., London, E.C.
 Anglo-Continental, Limited, Windsor-cl Great St. Helen's, London, E.C.
 China & Japan Telephone Co., Limited, Winchester-st., London, E.C.
 Consolidated Telephone Construction an tenance Company, Limited, 109, Fari rd., London, E.C.
 Crossley Telephone Co., 18, Austin London, E.C.; Albany-buildings, E Yorks.
 Edison-Gower Bell Telephone Co. of Limited, 34, Wallbrook, London, E.C.
 European Telephone Co., Limited, 6, L st., and 34, Wallbrook, London, E.C.
 Gower Bell Telephone Company, Limit Farringdon-rd., London, E.C.

Telephone Companies—continued.

& Cheshire Telephonic Exchange Co.,
38, Faulkner-st., Manchester.
d Globe Telephone and Maintenance
nited, 31, Queen Victoria-st., Lon-
.
Telephone Co., Limited, 11, Queen
-st., London, E.C.
Telephone Co., Limited, Wellington-
s, 40, Bennett's-hill, Birmingham.
Telephone Co., Limited, 3, Great Win-
t., London, E.C.
e Telephone and Electric Light Co.,
34, Walbrook, London, E.C.
Telephone Company, Limited, 20,
bury, London, E.C.
England Telephone Co., Limited, 98,
st., London, E.C.
ime & Telephone Co., 41, Cornhill, &
Queen Victoria-st., London, E.C.
Company of Austria, Limited, 34,
k, London, E.C.
Company of Egypt, 3, Gt. Winchester-
on, E.C.
Company of Ireland, Limited (W. J.
jun.), Commercial-buildings, Dublin.
ephone Co., Ltd., 36, Coleman-st.,
E.C.

Telephone Instrument Makers.

instruments téléphoniques (Fab. de).

G.—Telephon-Fabriken.

33, Strand, London, W.C.
Berger & Co., 31, Lombard-street,
E.C.
& Sons, 86, Canonbury-road,
N.
, 16, Burton-st., Nottingham.
Irish, 30, Borough-road, Sunderland.
ectric Company, 59, Moorgate-street,
E.C.

Wire Drawing Machines for Wire, &c.

—Machines d'essayer les fils.

Probirmaschinen für Draht etc..

Tyler & Co., 84 & 85, Upper White-
London, E.C.

Lead Foil Manufacturers.

—Feuilles d'étain (Fab. de).

—Zinn- und Bleiblätter—Fabr.

, Wharf-road, City-road, London, N.
mac, 28, Barbican, London, E.C.
urles, & Co., 238, Blackfriars-road,
E.

Tin & Lead Foil Manufcs.—continued.

Compton, Henry, & Co., 148, Fenchurch-st.,
London, E.C.
Grosvenor, Henry, 1, Bridgewater-square, Bar-
bican, London, E.C.
Quirk, Barton & Co., 61, Gracechurch-st., Lon-
don, E.C. Specially prepared for Electrical
purposes. *See index to advertisers.*
Robertson, Betts & Co., Elthorne-road, Upper
Holloway, London, N.
SABEL, MAX, 2, Coleman-st.-bldgs., London,
E.C. Tin and Lead Foil specially prepared
for accumulators, &c.
Schreiber, Frederick William, 5, Bond-court,
Walbrook, London, E.C.

Torpedo Manufacturers.

F.—Torpillen (Fab. de).

G.—Torpedo-Fabriken.

McEvoy, Captain C. A., 18, Adam-st., Adelphi,
London, W.C.

*** Trade Protection Societies.**

F.—

G.—

Blackham & Company, 29 & 30, Exchange-bldgs.,
Stephenson-place, Birmingham. For recovery
of debts, enquiries, and issuing weekly and
monthly gazettes.

*** Tube Brush Makers.**

F.—

G.—Bürsten zum Reinigen der Röhren.

Anderson, John C., 155, Fenchurch-st., E.C.
Boilers Tube Brushes, every description.
Dempster, Moore & Co., 49, Robertson-street,
Glasgow.
Orme, Fredk. & Co., 9, St. Andrew's-st., Holborn-
viaduct, London, E.C.
ROWAT, ALEXANDER & CO., 25, Candle-
riggs, Glasgow. (Boiler tubes).
SELIG, SONNENTHAL & CO. (American, &c.)
85, Queen Victoria-st., and Lambeth-hill,
London, E.C.

*** Tube Expanders.**

F.—

G.—Röhren-Auftreiber.

Dudgeon, Richard, 114, Fenchurch-st., London,
E.C. *See index to advertisers.*
Orme, Fredk. & Co., 9, St. Andrew's-st., Holborn-
viaduct, London, E.C.
SELIG, SONNENTHAL & CO. (Sonnenthal's
Patent), 85, Queen Victoria-st., and Lambeth-
hill, London, E.C. *See index to advertisers.*

Tube Makers—Brass.

F.—Tubes—Laiton.

G.—Röhren—Messing.

- Anderson, John C., 155, Fenchurch-st., London, E.C.
 Birmingham Battery & Metal Company, 21, Gresham-house, Old Broad-st., London, E.C.
 Birmingham Patent Iron & Brass Tube Co., Smethwick, Birmingham.
 BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; Dom Moltshanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.
 Bolton, T. & Sons, Broad-st. Metal Works, Birmingham, & Oakamoor, Cheadle, Staffordshire.
 BOOTH, J. & CO., Sheepcote-st., Birmingham. Telephone No. 311. *See index to advertisers.*
 Exton, & Co., Hercules Works, Chippenham, Wilts.
 Pane, Jas. & Son, Denmark-st., Birmingham.
 Smith, John & Sons, 18, 23 & 24, St. John's-sq., London, E.C.
 Wilkes, J., Mapplebeck & Co., 9, New Broad-st., London, E.C.

Tube Makers—Copper.

F.—Tubes—Cuivre.

G.—Röhren—Kupfer.

- BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; Dom Moltshanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.
 BOLTON, T. & SONS, Broad-st. Metal Works, Birmingham, and Oakamoor, Cheadle, Staffordshire.
 Booth, J. & Co., Sheepcote-st., Birmingham.
 Exton & Co., Hercules Works, Chippenham, Wilts.
 Smith, John & Sons, 18, 23 & 24, St. John's-sq., London, E.C.

Tube Makers—Iron.

F.—Tubes—Fer.

G.—Röhren—Eisen.

- Anderson, John C., 155, Fenchurch-st., London, E.C.
 BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; 38, West Smithfield, London, E.C.; and Dom Moltshanoff, Negliuny, Moscow. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.
 BOOTH, J. & CO., Sheepcote-st., Birmingham. Telephone No. 311. *See index to advertisers.*

Tube Makers—Iron—continued.

- DAVIS, F., Palace-chambers, 9, 1 London, S.W.
 Imperial Tube Co., Birmingham, work lane, Smethwick, Birmingham.
 Lloyd & Lloyd, Albion Tube Works, Bir
See index to advertisers.
 Orme, Fredk. & Co., 9, St. Andrew's-st. viaduct, London, E.C.
 Robinson & Co., Studkins Iron Work bridge.
 Smith, John & Sons, 18, 23 & 24, 8 square, London, E.C.
 SPENCER, JAMES E. & SAMUEL, st.-place, London, E.C. Works: Warehouse: 3, Three Cranes-lane, 1
 engineers, Agents & Manufacturers of of plant for Telegraph, Telephone & Co's.; also sole Agents for JOHN S. Maker of all kinds of Tubes, from 5 feet, Telegraph Poles, Point Rods, Spencer, John, Vulcan Tube Works, & West Bromwich, Birmingham, & 97 st., London, E.C.
 STANTON IRON WORKS CO LIMITED, Palace-chambers, 9, 1 London, S.W.
 TAUNTON, R. H. & HAYWARD, Palmerston-buildings, Old Broad-st. E.C. Also Makers of Steel Tubes, criptions of Engineering work entail Tubes.
 Tonks, William & Sons, 201, Moseley mingham. *See index to advertisers.*
 Weldless Steel Tube Co., 303, & 304 Port-road, Birmingham.
 Winfield, R. W. & Co., 47, Holborn London, E.C.

Tube Makers—Lead.

F.—Tubes—Plomb.

G.—Röhren—Blei.

- Clark, F. A. & Son, Marlborough-wh mersmith, London, W.
 Grey & Marton, Southwark-bridge, Lon

Tube Makers—Phosphor Br

F.—Tubes—Phosphor-Bronze.

G.—Röhren—Phosphor-Bronze.

- PHOSPHOR BRONZE COMPANY, L 87, Sumner-st., Southwark-st., Lond Wire and Sheet Mills, Bagot-st., Bir Sole makers, under patents, of phosph and silicium bronze. *See index to ad*

ine & Water Wheel Makers.

—*Turbines et Roues hydrauliques.*

7.—*Turbinen und Wasserräder.*

H. & Co., York-st. Works, Lam-
ndon, S.E.

H., & Co., Albion Works, Essex-st.,
Manchester.

J., 39, Wellington-quay, Dublin.

J., & Co., Southwark-park-road, Lon-
don.

ros., 32, Queen Victoria-st., London,
itche's patent turbines. *See index to*
rs.

3 & CO., Essex-st. Works, Victoria-
ment, London, W.C. Makers of
celebrated turbines.

les L., Ancholme Iron Works, Brigg,
hire.

ros. & Co., 28, Townsend-st., Belfast.

& Co., 22, Whitefriars-st., London, E.C.

lexander & Co., Vauxhall Iron Works,
orth-rd., London, S.W. *See index*
isers.

*** Valve Manufacturers.**

F.—Clapets (Fab. de).

G.—Ventil-Fabriken.

Shaw (agents) 10a, Victoria-buildings,
-st., Manchester.

ros., 32, Queen Victoria-st., London,

& PLATT, Salford Iron Works,
ter.

ONNENTHAL & CO., 85, Queen-
-st., and Lambeth-hill, London, E.C.
to advertisers.

**s—Parallel—Wrought & Cast
Iron.**

ros., & Wilson, Limited, Yorkshire
orks, Napier-st., Sheffield.

ILL, CHAS. & CO., 21, Cross-st.,
r, London, E.C. American.

ros., 32, Queen Victoria-st., London,

AIR, WM., Sheaf Island Works,
1, Sheffield.

lk. & Co., 9, St. Andrew's-st., Hol-
duct, London, E.C. *See index to*
rs.

ONNENTHAL & CO., 85, Queen
-st., and Lambeth-hill, London, E.C.
n, &c.) *See index to advertisers.*

Vulcanite Manufacturers.

F.—Vulcanite (Fab. de).

G.—Gummi-Fabriken.

Binswanger, G. & Co., 29, Aldermanbury,
London, E.C.

Britannia Rubber & Kamptulicon Co., 32, Cannon-
-st., London, E.C. *See index to advertisers.*

Burge & Warren, 42, Kirby-st., Hatton-gdn.,
London, E.C.

Fearns, Francis H. & Co., Trafalgar Works,
Old Kent-rd., London, S.E.

FOSTER & WILLIAMS, 87, Grange-rd., Ber-
mondsey, London, S.E.

FRANKS, ROBINSON & CO., 76, Milton-st.,
Fore-st., London, E.C. TURNERS OF
ELECTRICAL SMALL WORK IN VUL-
CANITE, EBONITE, IVORY, ETC. *See*
index to advertisers.

Gelbfuss, H., Moorgate-st.-buildings, London,
E.C.

Hanover Vulcanite Company, 63, Finsbury-
pavement, London, E.C.

HARBURG INDIA-RUBBER COMB COM-
PANY, 138, London-wall, London, E.C. *See*
index to advertisers.

Harburg & Vienna India Rubber Co., 10 to 14,
Tower-chambers, Moorgate-st., London, E.C.

MOSSES & MITCHELL, 68 to 71, Chiswell-st.
London, E.C. *See index to advertisers.*

New York Hamburg Rubber Company, 8, Cole-
man-st., London, E.C.

Scottish Vulcanite Company, Limited, Edinburgh.
London Offices, 5, Aldermanbury Postern,
London-wall, E.C.

Sheath Bros., 89, City-road, London, E.C. *See*
index to advertisers.

Winter, F., 138, London-wall, London, E.C..
See index to advertisers.

Woodhouse & Rawson, 11, Queen Victoria-st.,
London, E.C. *See index to advertisers.*

Watch Makers (Non-magnetizable).

F.—Montres non-magnétisables.

G.—

Dent, E. & Co., 61, Strand, London, W.C.

*** Wheel Cutters.**

F.—

G.—

Garnham & Co., Sash-ct., Wilson-st., Finsbury,
London, E.C. *See index to advertisers.*

OPPERMANN BROS., Brewhouse-yard, 172,
St. John's-street, London, E.C. *See index to*
advertisers.

White Metal Manufacturers.

F.—

G.—

Manganese Bronze and Brass Co., Limited, St.
George's Wharf, Deptford, London, S.E.
Parson's white brass.

Osborne & Co., 11, Great Garden-st., White-
chapel-rd., London, E. *See index to advertisers.*

SOUND! CENTRAL!! DURABLE!!!
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G. CROSLAND TAYLOR.

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Silk

Cotton

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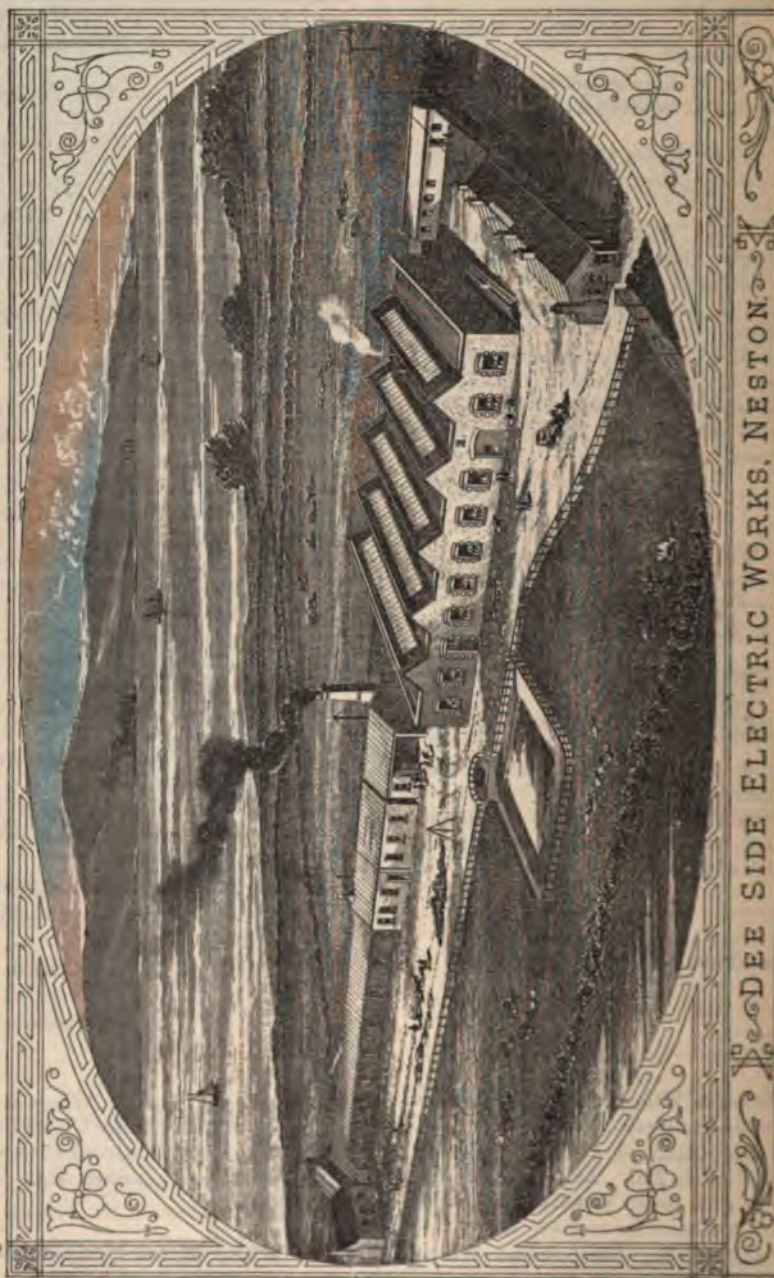
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DEE SIDE ELECTRIC WORKS, NESTON.

Wire Cord Manufacturers.

F.—

G.—

Glover, W. T. & Co. Chief office, 25, Booth-st., Manchester. London office, 28, Budge-row, E.C. Glasgow office, 85, Buchanan-st.

Rickard, William, Ashbourne-rd. Mills, Derby, London agent, Edwin Holloway, 2, Gutter-lane, E.C.

Wire Coverers—Cotton.

F.—Fils reconverts—Coton.

G.—Fabrik zum umspinnen des Drahtes.

Clegg & Shaw, 10a, Victoria-buildings, Victoria-st., Manchester.

Glover, W. T. & Co., chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.* Holloway, Edwin, 2, Gutter-lane, Cheapside, London, E.C. Agent for W. Rickard, Derby. Johnson & Phillips, 14, Union-court, Old Broad-st., E.C., and Victoria Works, Charlton, London, S.E. *See index to advertisers.*

Koerber, J. A., 44, Frith-street, Soho-square, London, W.

LONDON AND DERBY ELECTRIC WIRE COMPANY, LMTD., Fore-st., London, E.C. *See index to advertisers.*

LONDON ELECTRIC WIRE COMPANY, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

ORMISTON & CO., 25, Old-street, London, E.C. Phillips Bros., Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, London, E.) *See index to advertisers.*

RICKARD, WILLIAM, Ashbourne-road Mills, Derby, London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

TAYLOR, GEO. CROSLAND, Deo Side Electric Works, Neston, Cheshire. *See index to advertisers.*

Western Electric Company, 59, Moorgate-st., London, E.C.

WOODHOUSE & RAWSON, 11, Queen Victoria-street, London, E.C. Every size kept in stock, and special cable made. *See index to advertisers.*

Wire Coverers—India Rubber and Gutta Percha.

F.—Fils reconverts—Indiarubber.

G.—Drahtspinner—Indiarubber.

Bindoff, Levi, Hodges & Co., Royal Victor Works, Old Ford-road, Bow, London, E.

Clegg & Shaw, 10a, Victoria-buildings, Victoria-st., Manchester.

FOX, EDWIN & COMPANY, LIMITED, offices, 5, Great Winchester-st., London, E.C.; works, Millwall, London, E.C.

Wire Coverers—India Rubber and

Gutta Percha—continued.

Glover, W. T. & Co., chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

HENLEY'S W. T. TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.* India Rubber, Gutta Percha & Telegraph Works Co., Limited, 100, Cannon-st., London, E.C. Koerber, J. A., 44, Frith-st., Soho-square, London, W.

LEVY, ARMAND, electrical Sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ruysbruck, Brussels. Wires covered with gutta percha, India rubber, silk, cotton, &c.

LONDON & DERBY ELECTRIC WIRE COMPANY, LMTD., Fore-st., London, E.C. *See index to advertisers.*

LONDON ELECTRIC WIRE COMPANY, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

Phillips Bros., Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

Rickard, William, Ashbourne-road Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

TAYLOR, GEO. CROSLAND, Deo Side Electric Works, Neston, Cheshire. *See index to advertisers.*

WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. *See index to advertisers.*

Wire Coverers—Silk.

F.—Fils reconverts—Soie.

G.—Drahtspinner—Seide.

Clegg & Shaw, 10a Victoria-buildings, Victoria-st., Manchester.

Glover, W. T. & Co., chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*

Koerber, J. A., 44, Frith-st., Soho-square, London, W.

LONDON & DERBY ELECTRIC WIRE COMPANY, LMTD., Fore-st., London, E.C. *See index to advertisers.*

LONDON ELECTRIC WIRE COMPANY, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

ORMISTON & CO., 25, Old-st., London, E.C. Phillips Bros., Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

Wire Coverers—Silk—continued.

- Rickard, William, Ashbourne-road Mills, Derby.
London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*
TAYLOR, GEO. CROSLAND, Dec. Side
Electric Works, Neston, Cheshire. *See index
to advertisers.*
WOODHOUSE & RAWSON, 11, Queen Vic-
toria-st., London, E.C. *See index to advertisers.*

Wire Covering Machine Manufacturers.

F.—Machines à recouvrir les fils.

G.—Maschinen zum Drahtenspinnen—Fabr.

- BARRACLOUGH & CO., LIMITED, King-st.,
Manchester. *See index to advertisers.*
Davis, John & Co., All Saints' Works, Derby.
Gimson & Co., Vulcan-st., Leicester.
LEVY, ARMAND, electrical sundriesman, 252,
Goswell-rd., London, E.C.; and 42, Rue de
Ruybroeck, Brussels. Gutta percha and India
rubber covering machines.
MOFFATT, ALEXANDER & CO., 26, College-
st., Dowgate-hill, London, E.C. *See index to
advertisers.*
SELIG, SONNENTHAL & CO., 85, Queen
Victoria-st., and Lambeth-hill, London, E.C.
See index to advertisers.

Wire Drawers.

F.—Fils (Fab. de).

G.—Draht-Ziher.

- Abbey Tintern Wire & Tinsplate Co., Tintern,
near Chepstow.
Aspinall, J., South-la. Mills, Elland, Normanton.
Bateman, J., Parkhouse Mill, Low Moor, North
Bierley, Bradford.
Bedford, Steer, End & Co., 78, Long-lane,
London, S.E.
Bennett, W., 35, Horsefair, Kidderminster.
Binns, Alfred & Co., 4, Redcross-st., London, E.C.
Böcking, E. & Co., 101, Leadenhall-st., London,
E.C.
Bolton, T., & Sons, Oakmoor Mills, Cheadle,
Staffordshire.
Bottomley & Hirst, Victoria Mills, Brighouse.
Brown, J. & Co., Park-lane Wire Mills, Preston.
Brown, G., Lancaster-rd. North, Preston.
Caldicot Iron & Wire Co., Caldicot, Chepstow.
Campion, J., 65, Ellesmere-road, Roman-rd.,
London, E.
Child, Tobias & Co., Hathersage, Derbyshire.
Clayton, J., Cleckheaton, Yorkshire.
CLIFFORD CHARLES & SON, Rolling Mills,
Fazeley-st., Birmingham.
Cocker & Sons, Hathersage, Derbyshire.
Cockcroft, W., Quarry Mill, Cleckheaton, York-
shire.
COOKES & SWINNERTON, Barrow Steel
Wire Works, Barrow-in-Furness.
Crabtree, T., Barrack-st., Sheepscar, Leeds.

Wire Drawers—continued.

- Crabtree, T., 38, Thornton-rd., Bradford.
DAVIS & TIMMINS, Bowling-green
London, E.C.
Dawans, A., & Orban, H., 9, New Br
London, E.C.
Dennis, W. F. & Co., 101, Leaden-
hall-st., London, E.C.
Düsseldorfer, Eisen & Draht-Industrie, 6,
st., London, E.C.
Edelsten, Williams & Co., Newhall
George-st.-parade, Birmingham. In
Steel Wire.
Elliott's Metal Co., Limited, 93, Cam-
den-st., London, E.C.
Everitt, A. & Sons, Kingston Metal
Adderley-st., Birmingham.
Fairburn, D., Bank Mill, Mirfield, Yorks.
Fairburn, D., Sunny Bank, Battyford, North
Fearnley, D., Robert-town, Liversedge, Yorks.
Felton & Guilleaume (W. F. Dennis & Co.),
101, Leadenhall-st., London, E.C.
FOX, EDWIN & CO., LIM. Offices, 1
Winchester-st., London, E.C.; works
wall, London, E. Manufacturers of spe-
cial wire in fencing wire.
Glover, W. T. & Co. Chief office, 25, Be-
nbow-st., Manchester; London office, 28, Bud-
dington-st., London, E.C.; Glasgow office, 85, Bu-
dington-st. *See index to advertisers.*
Greening, N. & Sons, Crown Mills, Cr
Warrington.
Haggie Bros., South Shore, Gateshead.
Hall-st. Metal Rolling Co., J. T. Biaseker, m
Hall-st. Works, Birmingham.
Hanson, Dale & Co., Colne-rd., Hudders-
field.
Harrison, J. & Sons, Cookley Wire Mills,
Kidderminster.
Hawkins Bros. & Co., Bowling-green
Farringdon-road, London, E.C.
Hayley, S. & Son, High-st. Mill, Cle
Yorkshire.
Healey, Brearley & Healey, Little Job
Clifton-bridge, Brighouse, Yorks.
Heves Bros., Appleton, Widnes, Lancash
Hill, J. C. & Co., Lim., Oakfields Iron
Cwmbran, Newport.
Hill, T., Clifton-bridge, Brighouse.
Hirst, C., Toft's Mill, Cleckheaton, York
Holdsworth & Marsden, Rawfold Wire
Cleckheaton, Yorkshire.
Holt, J., School-st. Works, Toad-lane, B
Lancashire.
Imperial Wire Co. (Nettlefolds, Lim.) C
st., Smethwick, Birmingham.
Jackson, W. & Sons, 17, Sun-st., F
London, E.C.
Jagger, J. & G., Old Wire Mills, Thu
Sheffield.
JOHNSON, R. & NEPHEW, 8, Gt. Win-
chester-st., London, E.C.
Johnson, T. B., 4, Charles-st., C
London, E.C.
Kent, J. & H. & Co., New Bramton, Ches

Drawers—continued.

G., Monument-pl., Liverpool.
 & Ricard, 11, Queen Victoria-st.,
 , E.C.
 & Sons, Moorland Mill, Bradford-rd.,
 aton, Yorkshire.
 O., Moorside, Cleckheaton, Yorkshire.
 Morgan, Wildon Iron Works, Govilon,
 venny, Monmouthshire.
 , Victoria Mills, Brighouse.
 s. & Co., 3, Queen-st.-pl., Cannon-st.,
 , E.C.
RD WIRE, IRON & STEEL CO.,
ED, 14, St. Mary Axe, London, E.C.
 lam-lane, Warrington.
 O., Hightown, Liversedge, Yorkshire.
 R., Victoria Mills, Brighouse.
 la, Limited, 16, Broad-st., Birmingham.
ON & CO., 25, Old-st., London, E.C.
 F., 34, New-st., Worcester.
 Chas., 21, Great Winchester-st.,
 , E.C.
PS BROS., Lea Telegraph Works,
 y Wick, London, E. (late of Mackin-
 ne, Homerton, London, E.)
IOR BRONZE COMPANY, LIM.,
 inner-st., Southwark, London, S.E.
 Sheet Mills, Bagot-st., Birmingham.
 kers, under patents, of Phosphor Bronze
 cium Bronze.
 , F. W., 16, Hill-st., Finsbury,
 , E.C. Brass, H.C. copper, German
 platinum, &c.
 , J. & Co., 132, Queen Victoria-st.,
 , E.C.
 G., 9, New Broad-st., London, E.C.
 G., Summerford-brook, Willenhall.
 , Brook Foot Wire Mills, Horsforth,
 . S., Norgate, Bradford.
 n, J., 1, Bank-buildings, Manchester-
 radford.
 L, W. & CO., Springfield-rd., Glasgow.
 , 79, Victoria-st., Belfast.
 L, D. & CO., 2, Poet's Corner,
 , S.W.
 s., Nutsford-vale Works, West Gorton,
 ster.
 . W., 63, Bishopsgate-st. Within,
 , E.C.
 ., West-house, Wyke, Bradford.
 & Sons, Bradford-road, Brighouse,
 ire.
 row Iron Company, 93, Upper Thames-
 don, E.C.
 , 1A, Shrub-pl., Leith-walk, Edinburgh.
 redk. & Co., Caledonia Works, Halifax.
 B. & Co., 61, West Regent-st., Glasgow.
 & Sons, 18, St. John's-square, Clerk-
 London, E.C.
 F. & G. W. & Co., 38A, Shude-hill,
 ster.

Wire Drawers—continued.

Stanton, Fredk., & Edwin, wire for scratch
 brushes for electric purposes, Lewisham, Lon-
 don, S.E.
 Stott, J. F., Buxton-road, Huddersfield.
 Stott, F., Hartshead, Normanton.
 Swires, F., Moortop, Checkheaton, Yorkshire.
TAYLOR, D. F. & CO., New Hall Works,
 George-st. parade, Birmingham. Brass &
 Copper & high conductivity Copper Wire.
 Taylor, Saml. Irwin, 5, Little Love-lane, Wood-
 st., London, E.C.
 Thomée, F., 8, Coleman-st., London, E.C.
 Thomson, Sterne & Co., North Woodside-road,
 Glasgow.
 Trurnit, F., 18, Finsbury-circus, London, E.C.
 Tyne Wire Drawing Co., South-shore, Gateshead.
 Vivian, H. H. & Co. (Wm. George Hughes,
 manager), 31, Holly-st., Sheffield.
 Walker, R., Walker's Mills, Northgate, Cleck-
 heaton, Yorkshire.
 Walker, W., Hartshead, Normanton.
WHITECROSS WIRE & IRON COMPANY,
LIMITED, Milner-st., Warrington.
 Whiteley, Eli & Co., River-st., Rochdale, Lan-
 cashire.
 Winterbottom & March, Dearne Wire Mills,
 Barnsley, Yorkshire.
 Witte & Kämper (R. Uhlich & Müller, agents),
 37, King William-st., London, E.C.
 Wood, J. & Bros., Grove Mills, Brighouse,
 Yorkshire.
 Wood, J. & Sons, Wilkin Royd Mills, Brighouse,
 Yorkshire.
 Wood, W., Little John Mill, Clifton-bridge,
 Brighouse, Yorkshire.
 Woodhead, J., 8, Mill-street, Brighouse, York-
 shire.
 Wordsworth, Geo. & Sons, New Wire Mill,
 Thurgoland, Sheffield.
 Wright, P. & Sons, Broadwell Forge, Oldbury.

Wire Draw-Plate Makers.

P.—Plaques Pour Tréfileurs.

G.—Drahteisen-Fabriken.

Orme, Frederick & Co., 9, St. Andrew's-st.,
 Holborn-viaduct, London, E.C. *See index to*
advertisers.
HOLDSWORTH, SAMUEL, 54, Spencer-st.,
 London, E.C. Jewel Holes for drawing Wire.

Wire Gauge Manufacturers.

F.—

G.—Draht-Messer.

Apps, A., 433, Strand, London, W.C.
 Potter, F. W., 16, Hill-st., Finsbury, London,
 E.C. (Micrometers.)
RYLANDS BROS., LIMITED, 116, Church-st.,
 Warrington.

Wire Jewel Hole Gauge Makers.

F.—

G.—

Holdsworth, Samuel, 54, Spencer-st., Clerkenwell, London, E.C.

Wire Manufacturers—Brass.

F.—Fils—bronze.

G.—Draht—Messing.

Basso & Selve, Jeffery's-square, St. Mary Axe, London, E.C.

Birmingham Battery & Metal Co., 21, Gresham-house, Old Broad-st., London, E.C.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*

Elliott's Metal Co., Limited, Selly Oak Works, Birmingham.

FOX, EDWIN & CO., LIMITED, offices, 5, Gt. Winchester-st., London, E.C.; works, Millwall, London, E.

Hall-street Metal Rolling Company (J. T. Bissaker, manager), Hall-st. Works, Birmingham.

Heaton & Dugard, 77 to 80, Lower Loveday-st., Birmingham.

Heaton, Ralph, & Sons, Icknield-st., Birmingham. Stieber, John Balh, & Son, 5, Godliman-st., London, E.C.

Vivian, H. H. & Co., 10, Laurence Pountney-lane, London, E.C.

Winfield, R. W., & Co., Cambridge-st. Works, Birmingham.

Wire Manufacturers—Copper.

F.—Fils—cuivre.

G.—Draht—Kupfer

Basso & Selve, Jeffery's-sq., St. Mary-Axe, London, E.C.

Birmingham Battery & Metal Co., 21, Gresham-house, Old Broad-st., London, E.C.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

BOLTON, T. & SONS, Broad-street Metal Works, Birmingham, & Oakmoor, Cheadle, Staffordshire.

CLIFFORD, CHARLES & SON, Rolling Mills, Fazeley-st., Birmingham.

Davis & Timmins, Bowling Green-lane, London, E.C. *See index to advertisers.*

Elliott's Metal Co., Limited, Selly Oak Works, Birmingham.

Wire Manufacturers—Copper—

FOX, EDWIN & CO., LIMITED, 6 Great Winchester-st., London, E.C.; Millwall, London, E.

Glover, W. T. & Co., chief offices, 25, B Manchester; London office, 28, Bu E.C.; Glasgow office, 85, Buchanan-index to advertisers.

Hall-street Metal Rolling Company (J seker, manager), Hall-st. Works, Birr Heaton & Dugard, 77 to 80, Lower Lov Birmingham.

Heaton, Ralph, & Sons, Icknield-st., Bir Newton Keates, & Co., 28, King-st., Li ORMISTON & CO., 25, Old-st., Lond Rickard, William, Ashbourne-road Mill London agent, Edwin Holloway, 2 lane, E.C. *See index to advertisers.*

Stieber, John Balh, & Son, 5, Godl London, E.C.

Winfield, R. W., & Co., Cambridge-st Birmingham.

Wire Manufacturers—Cover

F.—Fils—reconverts.

G.—Lunaponneuer Draht.

BARRACLOUGH THOS. & CO., LI 8, King-st., Manchester. *See index to a Callenders Bitumen Telegraph & Watery Limited, 101, Loadenhall-st., London CLARK, L., MUIRHEAD & CO., 23, I st., London, S.W.*

Clegg & Shaw, 10A, Victoria-buildings, st., Manchester. *See index to advertis*

Dixon, Corbitt & Spencer, 26, Commers east, London, E.

Fuller, John Crisp, & Son, 547, Old F Bow, London, E.

Glover, W. T. & Co., chief office, 25, I Manchester; London office, 28, Bu E.C.; Glasgow office, 85, Buchanan-index to advertisers.

KING & CO., Western Electric Works Wine-st., Bristol.

LEVY, ARMAND, electrical sundries rubber, gutta percha, composition, covered cables, silk, cotton, covered w Goswell-road, London, E.C.; and 42 Ruysbreeck, Brussels. *See index to a LONDON & DERBY ELECTRIC COMPANY, Fore-st., London, E index to advertisers.*

LONDON ELECTRIC WIRE CO Anchor Works, Playhouse-yard, Gol E.C., late of Wenlock-buildings, Iro row, London, E.C. Manufacturers c wires of all descriptions for electric ments, dynamo machines, bell and ho &c. Fancy paraffined wires specially for telephone and other indoor cor *See index to advertisers.*

Ormiston & Co., 25, Old-st., London, E

Manufacturers—Covered—continued.

Bros., Lea Telegraph Works, Hackney
London, E. (late of Mackintosh-lane,
n, E.) *See index to advertisers.*
ROS., 12, Wharf-rd., London, N. *See*
advertisers.
William, Ashbourne-rd. Mills, Derby.
n agent, Edwin Holloway, 2, Gutter-
l.C. *See index to advertisers.*
MAX, 2, Coleman-st.-buildings, Lon-
don.
Electric Company, 59, Moorgate-st.,
n, E.C.

Manufacturers—Galvanized Iron.

F.—Fils—Fer galvanisé.
G.—Draht—Galvanisches Eisen.
Bassall & Son, 29, High-st., West Cowes.
, West Bute Docks, Cardiff.
L., Monmore-green, Wolverhampton.
S.W., 5, St. John's-road, Kate's-hill,
n.
& Co., Albion Works, Mount-pleasant,
n, Staffordshire.
& A., Clarence-st. Works, W'hampton.
S & SWINNERTON, Barrow Steel
Works, Barrow-in-Furness.
E., Crown Galvanized Iron Works,
n-k-road, Wolverhampton.
Thomas, Ettingshall, Wolverhampton.
S. J. & E., Vulcan Works, W'hampton.
DWIN & CO., LIMITED. Offices, 5,
n-chester-st., London, E.C. Works,
n, London, E.
n-k Iron & Galvanized Iron and Wire
n-Wolverhampton.
nilton, Pearson-st., Wolverhampton.
n. & F., Pountney-st., Wolverhampton.
ON, R. & NEPHEW, 8, Great Win-
n-st., London, E.C.
ros. & Co., Ablow-st., Wolverhampton.
n. & Co., Drayton-st. West, W'hampton.
J., Dudley-st., Bilston.
William, Ashbourne-road Mills, Derby.
n agent, Edwin Holloway, 2, Gutter-la.,
n, E.C.
DS BROS., LIMITED, 116, Church-st.,
npton.
McLean, Gartcoch, Rolling Mills, Coat-
, Lanarkshire.
C. & Son, Pountney-st., Wolverhampton.
Taylor, Redcliff-st., Bristol.
R., & Müller, 37, King William-st.,
n, E.C.
n, J., Cave-st., St. Paul's, Bristol.
& Ewens, Central Iron Works, Chelten-
nhampton.
n. S., 153, Dudley-rd., Wolverhampton.
E., 30, Stafford-st., Willenhall, near
hampton.

Wire Manufra.—Galvanized Iron—contd.

WHITECROSS WIRE & IRON COMPANY,
LIMITED, Milner-st., Warrington.
Witte & Kämper (R. Uhlich & Müller, agents),
37, King William-st., London, E.C.
Wolverhampton Corrugated Iron Co., Church-
lane, Wolverhampton.
Wright, W. B. & Co., St. Philip's-marsh, Bristol.

Wire Manufacturers—German Silver.

F.—Fils—Maillechort.
G.—Draht—Neusilber.
ARMSTRONG, STEVENS & CO., 15, Whittall-
st., Birmingham.
Clegg & Shaw, 10A, Victoria-buildings, Victoria-
st., Manchester. *See index to advertisers.*
Glover, W. T. & Co. Chief office, 25, Booth-st.,
Manchester; London office, 28, Budge-row,
E.C.; Glasgow office, 85, Buchanan-st. *See*
index to advertisers.
ORMISTON & CO., 25, Old-st., London, E.C.
Rickard William, Ashbourne-road Mills, Derby.
London agent, Edwin Holloway, 2, Gutter-la.,
London, E.C. *See index to advertisers.*
Smith, John & Son, 18, 23-24, St. John's-sq.,
London.

Wire Manufacturers—Insulated.

F.—Fils—isolée.
G.—Isolatorischer Draht.
Anderson & Munro, 136, Bothwell-st., Glasgow.
Baughan, W. H. & Co., Charlbury, Oxon. *See*
index to advertisers.
Clegg & Shaw, 10A, Victoria-buildings, Victoria-
st., Manchester. *See index to advertisers.*
FOX, EDWIN & Co., Limited, offices, 5,
Great Winchester-street, London, E.C.;
works, Millwall, London, E.
Gent, J. T. & Co., Faraday Works, King
Richard's-rd., Leicester. *See index to advertisers.*
Glover, W. T. & Co., chief office, 25, Booth-st.,
Manchester: London office, 28, Budge-row,
E.C.; Glasgow office, 85, Buchanan-st. *See*
index to advertisers.
Kinetic Engineering Company, 1, Wardrobe-
place, Doctors'-commons, London, E.C.
LONDON & DERBY ELECTRIC WIRE
COMPANY, LIMITED, 122, Fore-st., Crip-
plegate, London, E.C. *See index to advertisers.*
LONDON ELECTRIC WIRE COMPANY,
Anchor Works, Playhouse-yard, Golden-
lane, London, E.C., late of Wenlock-buildings,
Ironmonger-row, London, E.C., Manufac-
turers of insulated wires of all descriptions for
electrical instruments, dynamo-machines, bell
house, telephone work, &c. Contractors to the
principal Government Departments and Electric
Light and Telephone Companies. *See index to*
advertisers.

Wire Manufacturers—Insulated—contd.

Phillips Bros., Lea Telegraph Works, Hackney Wick, London, E., late of Mackintosh-lane, Homerton, London, E. *See index to advertisers.*
 Rickard, William, Ashbourne-rd. Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, London, E.C. *See index to advertisers.*
 TAYLOR, GEORGE CROSLAND, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*
 Walters, Daniel & Sons, 43 & 45, Newgate-st., London, E.C. Wire Insulating Machine, patented 1881.
 Western Electric Company, 59, Moorgate-st., London, E.C.

Wire Manufacturers—Iron.

F.—File—Fer.

G.—Draht—Eisen.

Binns, J. & A., West Mount, Wire Mills, Halifax.
 BLEWS, WILLIAM & SONS (agents), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)
 Braby, F., & Co., Garngad Works, Glasgow.
 Burt, J. H. & Co., 1A, Laurence Pountney-lane, London, E.C.
 Cornforth Bros., 155 and 156, Dartmouth-st., Birmingham.
 Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*
 Dilwynn & Co., Cambrian-place, Swansea.
 Edelsten, Williams & Co., Newhall Works, George-st.-parade, Birmingham.
 FOX, EDWIN & CO., LIMITED. Offices, 5, Gt. Winchester-st., London, E.C.; works, Millwall, London, E. For iron and steel fencing.
 Fox, Sam. & Co., Limited, Stockbridge Works, Stockbridge, Sheffield.
 Haybridge Iron Co., Limited, Dallam-lane, Warrington.
 Hyde, J., 14, George-st., Parade, Birmingham.
 Imrie, D., Bank-chambers, Temple-st., Swansea.
 Iron Wire, Wire Rope & Fencing Company, 2, Poet's-corner, London, S.W.
 JOHNSON, R. & NEPHEW, 8, Great Winchester-st., London, E.C.
 Lambert, C. & Co., Port Tennant Copper Works, Swansea.
 LONGFORD WIRE, IRON & STEEL COMPANY, LIMITED, 14, St. Mary-axe, London, E.C., and Dallam-lane, Warrington.
 Mountain, Wm. & Sons, Trafalgar Works, Vincent-st., Newcastle.
 Rickard, William, Ashbourne-rd. Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*
 RYLANDS BROS, LIMITED, 116, Church-st., Warrington.

Wire Manufacturers—Iron—continues

Schulte, Chas. (agent), Exchange-bui Stephenson-place, Birmingham. Manufacturer of wire rods, telegraph and rope
 Smith, Fredk. & Co., Caledonia Works, F Tindale Spelter Company, Newcastle-on-Tyne.
 Vivian & Sons, Hafod Works, Swansea.
 Webster & Horsfall, Killamarsh, Chester.
 Williams, Foster & Co., Morfa Copper Swansea.
 Witte & Kämper (R. Uhlich & Müller, 37, King William-st., London, E.C.
 Wood, William, Little John Mill, Clifton-Brigthouse.

Wire Manufacturers—Phosphor B

F.—File—Phosphor Bronze.

G.—Draht—Phosphor Bronze.

FOX, EDWIN, & CO., LIMITED, off Gt. Winchester-st., London, E.C.; Millwall, London, E.
 PHOSPHOR BRONZE COMPANY, LIM 87, Sumner-st., Southwark, London, and Wire and Sheet Mills, Bagot-st mingham. Sole makers, under pate phosphor bronze and silicium bronze. *See index to advertisers.*

Wire Manufacturers—Steel.

F.—File (Fab. de)—Acier.

G.—Braht-Fabriken—Stahl.

Cocker & Sons, Hathersage, Sheffield.
 COOKES & SWINNERTON, Barrow Wire Works, Barrow-in-Furness.
 Cornforth Bros., 155 & 156, Dartmouth-st., Birmingham.
 FOX, EDWIN, & CO., LIMITED, off Gt. Winchester-st., London, E.C.; Millwall, London, E.
 JOHNSON, R., & NEPHEW, 8, Gt. Winchester-st., London, E.C.
 Kugel & Berg, Jeffrey's-square, St. Ma London, E.C.
 LONGFORD WIRE, IRON & STEEL LIMITED, 14, St. Mary-axe, London and Dalham-lane, Warrington.
 Rollason, Carmi, A. T., & Co., 40, Rich Dartmouth-st., Birmingham.
 RYLANDS BROS., LIMITED, 116, Church-st., Warrington.
 Sanderson Bros. & Co., Limited, 19, Warrington, London, E.C.
 Smith, J. & Son, 18, St. John's-square, Clifton, London, E.C.
 Witte & Kämper (R. Uhlich & Müller, 37, King William-st., London, E.C.
 Woodhead, J., Mill-st., Brigthouse.

Manufacturers—Telegraph.

Fils télégraphiques (Fab. de).

Draht Fabriken für Telegraphie.

NG, STEVENS & CO., 15, Whittall-ngham.

ve, Jeffrey's-square, St. Mary Axe, E.C.

A., West Mount Wire Mills, Halifax.

LLIAM & SONS (agents), 9 to 15, tholomew-st., Birmingham; Don off, Negliuny, Moscow; and 38, West, London, E.C. Contractors to the Moscow, Mexico, San Paulo, &c. Gas s. (Established, 1782.)

, & Co., Limited, Saville-st., Sheffield.

, MUIRHEAD & CO., 23, Regency-ninster, London, S.W.

rw, 10a, Victoria-buildings, Victoria-hestor. *See index to advertisers.*

& Co., Limited, Tinsley Steel and ka, Sheffield.

& SWINNERTON, Barrow Steel rks, Barrow-in-Furness.

ros., 155, Dartmouth-st., Birmingham.

I., jun., & Co., Tinsley, Sheffield.

& Holland, Percy-road, Greet, Bir-

nmans, Bowling-green-lane, London,

See index to advertisers.

F., 101, Leadenhall-st., London, E.C.

bitt, & Spencer, 26, Commercial-rd.-don, E.

& Co., Windsor Iron Works, Speak-Liverpool.

N, WILLIAMS & CO., Newhall eorge-st.-parade, Birmingham.

etal Company, Limited, Selly Oak Birmingham.

uilleaume (W. F. Dennis & Co.) 101, ll-st., London, E.C. *See index to s.*

WIN, & CO., LIMITED, offices, 5, chester-st., London, E.C.; works, London, E.

: Co., Limited, Stocks Bridge Works, Sheffield.

. T., & Co., chief office, 25, Booth-st., ter; London office, 28, Budge-row, lasgow office, 85, Buchanan-st. *See idvertisers.*

R., & Co., Upper Rawfold's Works, ton.

etal Rolling Company (J. T. Bisseker,), Hall-st. Works, Birmingham.

n, E., Victoria-st., East Halifax.

, & Sons, Icknield-st. East, B'ham.

'S W. T. TELEGRAPH WORKS NY, LIMITED, offices, 8, Drapers'-London, E.C. *See index to advertisers.*

Crowther & Co., Tinsley, Rotherham.

ard & Co., Newport Wire Mills, xrough.

Wire Manufacturers—Telegraph—contd.

IRON WIRE, WIRE ROPE, & FENCING CO.

2, Poet's-corner, Westminster, London, S.W.

Jenkins, Thomas & Leonard, 42, George-st.-parade, Birmingham.

JOHNSON, R., & NEPHEW, 8, Great Win-chester-st., London, E.C.

Koerber, J. A., 44, Frith-st., Soho-square, Lon-don, W.

Kugel & Berg, Jeffrey's-square, St. Mary-axe, London, E.C.

LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels.

Electrical sundriesman. *See index to adver-tisers.*

LONDON AND DERBY ELECTRIC WIRE COMPANY, LMTD., Fore-st., London, E.C.

See index to advertisers.

LONDON ELECTRIC WIRE COMPANY.

Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, Old-street, London, E.C.) *See index to advertisers.*

Middlehurst, P., Mill-lane, Crank, Rainford, St. Helen's.

Moore & Manby, 3, Billiter-square, London, E.C.

Patchett, G., Sedburgh Mill, Halifax.

PHILLIPS BROS., Lea Telegraph Works, Hackney-wick, E. (late of Mackintosh-lane, Homerton, London, E.) *See index to advertisers.*

PHOSPHOR BRONZE COMPANY, LMTD., 87, Sumner-st., Southwark-st., London, S.E.;

wire and sheet mills, Bagot-st., Birmingham.

Sole makers, under patents, of Phosphor Bronze and Silicium Bronze. *See index to ad-vertisers.*

Power, F. A., & Co., Midland Wiro Mills, Saltley, Birmingham.

Pratt, W. J., Well-lane, Halifax.

Ramsden, Camm & Co., Brighouse, Yorkshire;

London office, 72, King William-st., E.C.

Rickard, William, Ashbourne-road Mills, Derby.

London agent, Edwin Holloway, 2, Gutter-lane, London, E.C. *See index to advertisers.*

Rigby, J. & Sons, Old and New Britannia Wks., Wednesbury.

Rindfleisch, E. & Co., 45, Hope-st., Glasgow.

Rogers, G. F., 5, Great Winchester-st., London, E.C.

Royston, J., Son & Co., Lea Bank Wire Mills, Shrogg's-road, Halifax.

RYLANDS BROS., LIMITED, 116, Church-st., Warrington.

Scott Bros., Nutsford Vale Works, West Gorton, Manchester.

Share, G. W. & Co., 72, King William-st., London, E.C.

Shaw, J., Yorkshire Wire Rope and Fencing Works, Soho-st., Eccleshall-road, Sheffield.

Shropshire Iron Company, Limited, Hadley, Wellington, Salop.

Smith, Frederick & Co., Caledonia Works, Halifax.

Patent Galvanized High Conductivity Tele-graph Wire to all specifications.

Wire Manufacturers—Telegraph—contd.

TAYLER, D. F. & CO., New Hall Works, George-st.-parade, Birmingham.
 Western Electric Company, 59, Moorgate-st., London, E.C.
 WHITECROSS WIRE & IRON COMPANY, LIMITED, Milner-st., Warrington.
 Wilkes, J., & Sons, Liverpool-st., Birmingham.
 Witte & Kämper (R. Uhlich & Müller, agents), 37, King William-st., London, E.C.
 Wright, J. & E., Universe Works, Garrison-st., Birmingham.

Wire Manufacturers—Telephone.

F.—Fils téléphoniques (Fab. de).

G.—Draht für telefonie.

ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.
 Basse & Selve, Jeffrey's-square, St. Mary-axe, London, E.C.
 BLEWS WILLIAM & SONS (agents), 9 to 16, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliun, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)
 Clegg & Shaw, 10A, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers.*
 COOKES & SWINNERTON, Barrow Steel Wire Works, Barrow-in-Furness.
 Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*
 EDELSTEN, WILLIAMS, & CO., Newhall Works, George-st.-parade, Birmingham.
 Felten & Guilleaume (W. F. Dennis & Co.), 101, Leadenhall-st., London, E.C. *See index to advertisers.*
 FOX, EDWIN, & COMPANY, LIMITED, Offices, 5, Great Winchester-st., London, E.C. Works, Millwall, London, E.
 Glover, W. T. & Co. Chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*
 Hall-st. Metal Rolling Co. (J. Bissek, manager), Hall-st. Works, Birmingham.
 HENLEY'S, W. T., TELEGRAPH WORKS CO., LIMITED; offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*
 Johnson, R., & Nephew, 8, Gt. Winchester-st., London, E.C.
 Koerber, J. A., 44, Frith-street, Soho-square, London, W.
 Kugel & Berg, Jeffrey's-square, St. Mary-axe, London, E.C.
 LEVY, ARMAND, 252, Goswell-rd., London, E.C.; and 42, Rue de Raysbroeck, Brussels. Electrical sundriesman. *See index to advertisers.*
 LONDON & DERBY ELECTRIC WIRE CO., LIMITED, Fore-st., London, E.C. *See index to advertisers.*
 LONDON ELECTRIC WIRE CO., Anchor Works, Playhouse-yard, Golden-lane, London, E.C., late of Wenlock-buildings, Ironmonger-row, E.C. Makers of special wire for telephone purposes. *See index to advertisers.*

Wire Manufacturers—Telephone—

PHILLIPS BROS., Lea Telegraph Works, ney-wick, London, E., late of Mackintosh Homerton, London, E. *See index to advertisers.*
 PHOSPHOR BRONZE CO., LIMITED, Sumner-st., Southwark, London, S.E. and sheet mills, Bagot-st., Birmingham makers, under patents, of phosphor bronze. *See index to advertisers.*
 Ramsden, Camm & Co., 72, King Will London, E.C., and Brighouse, Yorks.
 Rickard, William, Ashbourne-road Mills, London agent, Edwin Holloway, 2, lane, London, E.C. *See index to advertisers.*
 Rogers, G. T., 5, Gt. Winchester-st., London.
 RYLANDS BROS., LIMITED, 116, Church Warrington.
 Smith, Fredk. & Co., Caledonia Works, Tayler, D. F. & Co., New Hall Works, st.-parade, Birmingham.
 Western Electric Company, 59, Moorgate London, E.C.
 Whitecross Wire & Iron Co., Limited, Mill Warrington.
 Witte & Kämper (R. Uhlich and Müller, 37, King William-st., London, E.C.
 Barraclough, Thomas & Co., Limited, 8 st., Manchester. *See index to advertisers.*
 Bastin, E. P. & Co., works, West I Middlesex. London office, 49, Finsbury ment, London, E.C.
 Moffatt, Alexander & Co., 26, College-st gate-hill, London, E.C. *See index to advertisers.*
 Smith, Arch & Stevens, 48, Leicester-sq don, W.C.

Wire Rope Machine Makers

F.—

G.—Maschinenbau für Drahtseile.

Barraclough, Thomas & Co., Limited, 8 st., Manchester. *See index to advertisers.*
 Bastin, E. P. & Co., works, West I Middlesex. London office, 49, Finsbury ment, E.C.
 Moffatt, Alex. & Co., 26, College-st., D hill, London, E.C. *See index to advertisers.*
 Smith, Arch & Stevens, 48, Leicester-sq London, W.C.

Wire Rope Manufacturers.

F.—Corde (Fab. de).

G.—Seiler.

Back, Usher, 77, Blackfriars-road, London.
 Binks Bros., Strafford-st., Millwall, Lea
 Black, John, & Co., 204, Elliot-st., Glasgow.
 Bossomaier, R. & Co., 72, Finsbury-par London, E.C.
 Briant, W. H., 1, Emmett-st., Poplar, London.
 Bullivant & Co., West Ferry-road, 3 London, E.
 Burt, J. H. & Co., 1A, Laurence Pountney London, E.C.
 Cameron, John & Co., 9, Oswald-st., Glasgow.

ope Manufacturers—continued.

Shaw, 10a, Victoria-buildings, Victoria-
nchester.

SWINNERTON, Barrow Steel
Works, Barrow-in-Furness.

Speeding Bros., Wear, Hemp & Wire
Works, Sunderland (Messrs. J. A. Black
London agents), Leadenhall-house,
hall-st., London, E.C.

Joseph & Sons, St. Ann's Ropery,
tle-on-Tyne.

rwood & Humble, Byker Ropery, New-
n-Tyne.

& Co., 23, Gt. George-st., London, S.W.

win & Co., 13, Emmett-st., Poplar,
, E.

Guillaume (W. F. Dennis & Co.,
, 101, Leadenhall-st., London, E.C.

OWIN & CO., LIMITED, offices, 5,
Winchester-st., London, E.C.; works,
l, London, E.

Bibby & Co., Head Office, Chapel-st.,
ol.

T. & Co., chief office, 25, Booth-st.,
ster: London office, 28, Budget-row,
, E.C.; Glasgow office, 85, Buchanan-
sgow. *See index to advertisers.*

Hood & Co., Queen-st., Newcastle-
e.

W. T., TELEGRAPH WORKS
NY, LIMITED, offices, 8, Drapers'-
London, E.C. *See index to advertisers.*

OR BRONZE COMPANY, LIM.,
nner-st., Southwark, London, S.E.

Sheet Mills, Bagot-st., Birmingham.

akers, under patents, of Phosphor
& Silicium Bronze. *See index to ad-*

William, Ashbourne-rd. Mills, Derby.
Holloway, London agent), 2, Gutter-
ndon, E.C. *See index to advertisers.*

S BROS., LIMITED, 116, Church-
rington.

& Co., 110, Hope-st., Glasgow.

& W. (H. G. Copeland & Co., agents),
er-avenue, London, E.C.

m. & Sons, Limited, Welsh-back and
marsh, Bristol.

. W. & J., 21, West Nile-st., Glasgow.

ROSS WIRE & IRON COMPANY,
ED, Milner-st., Warrington.

re Staples Manufacturers.

F.—Crochets pour fils de fer.

G.—Draht-Krampen.

& SWINNERTON, Barrow Steel
orks, Barrow-in-Furness.

WIN & CO., LIM. Offices, 5, Great
ter-st., London, E.C.; Works, Mill-
ndon, E.

. & Sons, Brighouse, Yorkshire.

DS & CO., 57, New Compton-st.,
W.C. Flat wire staples especially
for fixing conducting wires. *See index*

iers.

Wire Staples Manufacturers—continued.

RYLANDS BROS., Lim., 116, Church-st.,
Warrington.

Western Electric Company, 59, Moorgate-st.,
London, E.C.

*** Wire Workers and Weavers.**

F.—Fils (Façonneurs de).

G.—

CLARK, J., 46 & 47, High-st., Broad-st., W.C.

POTTER, F. W., 16, Hill-st, Finsbury-sq.,
London, E.C.

Reynolds & Co., 57, New Compton-st.,
London, W.C. *See index to advertisers.*

RIDDELL, WM. & CO., Springfield-rd.,
Glasgow.

ROWAT, ALEX. & CO., 25, Candleriggs,
Glasgow.

*** Wood-working Machinists.**

F.—Machinistes (façonnant le bois).

G.—Frainer.

Orme, Fredk. & Co., 9, St. Andrew's-st.,
Holborn-viaduct, London, E.C. *See index to*
advertisers.

SELIG, SONNENTHAL & CO., 85, Queen
Victoria-st., & Lambeth-hill, London, E.C.
See index to advertisers.

Zinc Manufacturers.

F.—Zinc.

G.—Zink.

Chubb, W. H., 849, High-st., West Bromwich.

Croggon & Co., 7, John-st., Glasgow.

Holmes, A., 58, Nelson-st., S.S., Glasgow.

Stevenson, Wm. & Co., 74 to 80, Brown-st.,
Glasgow.

Sunderland, Angus, 82, Oxford-st., Glasgow.

Tosh Henry, 197, 199, 201, Buchanan-st., Glasgow.

WHALLEY, A., 71, Fleming-sq., Blackburn.

Wheeler, J., 315, Soho-road, Handsworth.

Zinc (Battery Plates) Manufacturers.

F.—

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ANGLO-AMERICAN TELEGRAPH COMPANY, LIMITED. General Office Old Broad-street, London, E.C. T. H. WELLS, Esq., Secretary; H. WEAVER, Esq., Managing Director. Directors—The Right Hon. Viscount Monck (Chairman), Sir James Anderson, Bart., 10, Old Broad-street, E.C., William Barber, Esq., 9, The Boltons, Brompton, S.W., Francis Bevan, Esq., 54, Lombard-street, E.C., Charles Crapelet, Esq., 11, Avenue de Messine, Paris, William S. Cunard, Esq., 6, St. Helen's-place, E.C., Cyrus W. Field, Esq., Gramercy Place, New York, Sir Daniel Gooch, Bart., M.P., Clewer Park, Windsor, The Hon. Robert Grosvenor, 24, Mount-street, W., The Most Hon. the Marquis of Tweeddale. Auditors—Joshua Milner, Esq. and Francis Glass, Esq.

BRAZILIAN SUBMARINE TELEGRAPH COMPANY, LIMITED. Head Office 8, Great Winchester-street, London, E.C. RICHARD COLLETT, Esq., Secretary; J. FULLER, Esq., Managing Director. Directors—The Right Hon. Viscount Monck (Chairman), Sir James Anderson (Vice-Chairman), The Hon. W. St. John F. Brodrick, M.P., Sir John Fairbairn, Bart., Henry Daniel Gooch, Esq., Frederick Youle, Esq. Directors represent the Company abroad—Senor Carlos Ferreira dos Santos Silva (Lisbon) and Senor Frederico Taylor (Rio de Janeiro). Agents: Lisbon, Col. F. L. M. Albuquerque; Pernambuco, Jules Despecher, 28, rue Caumartin; Funchal, Madeira, Messrs. Blandy Brothers & Co.; Rio de Janeiro, Vincent, Messrs. Millers & Nephew. Stations: London, 11, Old Broad street, E.C.; Liverpool, H 5, Exchange-buildings; Portugal, Lisbon and Carcavellos; Madeira, Funchal; Cape Verde Islands, St. Vincent; Brazil, Pernambuco; and from any Postal Station in Great Britain, Ireland, and India. When not given in at the Company's offices, telegrams should be directed to the nearest "Eastern," these words being signalled by the postal authorities free of charge. Books of rates, tariffs, &c., forwarded post free on application to the Company's chief offices, 8, Great Winchester-street, London, E.C.

COMPAGNIE FRANCAISE DU TELEGRAPHE DE PARIS À NEW YORK. Offices for the reception of messages—London, 24, Royal Exchange, E.C.; New York, 10, Broadway; and all postal telegraph offices.

COMPANY FOR THE LAYING AND MAINTENANCE OF THE GERMAN-NORWEGIAN SUBMARINE CABLE. London agency, 66, Old Broad-street, E.C. Capital, 1,690,000 Marks. Reserve fund 47,605 Marks, being an increase of 14,954 Marks; and 1,596 Marks; a decrease of 2,960 Marks.

CONSOLIDATED TELEPHONE CONSTRUCTION AND MAINTENANCE COMPANY, LIMITED. Telephone and Electrical Works, 109, Farringdon-road, E.C. Capital £224,850. Directors—Sir Julius Vogel, K.C.M.G. (Chairman), Col. G. G. (Deputy-Chairman), Sir Alexander Armstrong, K.C.B., LL.D., &c., The Hon. J. Spensley, John P. Bigelow, Esq., P. Carnegie, Esq., C.I.E.; Charles Curtoys, Esq., &c. The Company has been established for the manufacture and sale of Telephones under the Edison-Bell, Gower-Bell, and other patents, and for the manufacture and sale and description of articles connected with Telephones.

CUBA SUBMARINE TELEGRAPH COMPANY, LIMITED, 61, Old Broad-street, London, E.C. Mr. James Scott, Secretary; Directors—Joaquin de Mancha, Esq., Chairman, Bannatyne, Esq., Alexander F. Low, Esq., Horatio J. Perry, Esq. The capital is £160,000 fully paid ordinary shares of £10, and £60,000 in 10 per cent. cumulative preference of £10 fully paid.

A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

RECT SPANISH TELEGRAPH COMPANY, LIMITED. General Offices, Leadenhall-buildings, Leadenhall-street, London, E.C. London Station, 1, Leadenhall-street, E.C. **CHARLES GERHARDT, Esq.,** Manager. Directors—Neil Bannatyne, Esq. (Chairman), Edmund Ettlinger, Esq.; Abraham Scott, Esq.; Sir James Anderson; John Denison Pender, Esq. Capital—12931 Ordinary shares (£9 paid) £116,379; 6,000 Preference shares (£10 paid) £60,000; total, £176,379. Cables—Falmouth to Bilbao, 479 knots; Marseilles to Barcelona, 220 knots; Landlines, in England, France, and Spain, 26 knots; total, 725 knots.

RECT UNITED STATES CABLE COMPANY, LIMITED. **J. W. FULLER, Esq.** Secretary and Traffic Manager. Directors—John Pender, Esq., M.P. (Chairman); William Ford, Esq.; C. J. Günther, Esq.; Lord Hawke; Admiral The Hon. Sir Henry Keppel, G.C.B.; Admiral R. C. Mayne, C.B.; Charles Meara, Esq.; E. M. Underdown, Esq. Rate to New York and Canada, 2s. per word. For rates to other places, and further particulars, apply at the Company's offices. Head stations (always open) London, 34, Throgmorton-street, E.C.; Liverpool, D6, Exchange-buildings. Branch Stations in London—South Sea House (adjoining the "Baltic"), Threadneedle-street, E.C.; East India Avenue, Leadenhall-street, E.C.; The Commercial Sale Rooms, Mincing-lane, E.C.; and 52, Old Broad-street, E.C. To save time the public in London and Liverpool are recommended to hand in their Telegrams at the Company's Stations, as above, where receipts are given for the amounts charged. Telegrams for this Company's Cables handed in at the Postal Telegraph Offices, must be marked "via Direct Cable." This instruction is signalled free of charge. The name of the place, from which messages originate, is transmitted free of charge. General offices, 52, Old Broad-street, London, E.C.

STERN TELEGRAPH COMPANY, LIMITED. 66, Old Broad-street, London, E.C. **SIR JAMES ANDERSON, Managing Director;** **CHARLES W. STRONGE, Esq., C.B.,** Official Director. Directors—John Pender, Esq., M.P. (Chairman); The Most Hon. the Marquis of Tweeddale (Vice-Chairman); George G. Nicol, Esq.; Lord Alfred Paget; John Denison Pender, Esq.; Lord Sackville A. Cecil. Telegrams can be sent from the Company's offices, 11, Old Broad-street, London, E.C., 8, Leadenhall-street, London, E.C., 3, Great Tower-street, London, E.C.; H5, Exchange-buildings, Liverpool; 20, Brown-street, Manchester, and from any postal station in Great Britain and Ireland. When not given in at the Company's Offices, Telegrams should be directed "*via* Eastern," these words being signalled by the postal authorities free of charge. Books of forms, tariffs, &c., forwarded post free on application to the Company's chief offices, 66, Old Broad-st., London, E.C. By order, George Draper, Secretary.

STERN EXTENSION, AUSTRALASIA AND CHINA TELEGRAPH COMPANY, LIMITED. 66, Old Broad-street, London, E.C. Directors—John Pender, Esq., M.P. (Chairman); Sir James Anderson; Francis A. Bevan, Esq.; Charles W. Earle, Esq.; Sir Thomas Fairbairn, Bart.; The Right Hon. Viscount Monck; Sir William McArthur, K.C.M.G., M.P.; George G. Nicol, Esq.; The Most Hon. the Marquis of Tweeddale.

STERN AND SOUTH AFRICAN TELEGRAPH COMPANY, LIMITED. 66, Old Broad-street, London, E.C. **SIR JAMES ANDERSON, Managing Director;** **CHARLES W. STRONGE, Esq., C.B.,** Official Director. Directors—John Pender, Esq., M.P. (Chairman); Sir Daniel Gooch, Bart, M.P.; Admiral Sir Leopold G. Heath, K.C.B.; James Pender, Esq.

ISON-GOWER-BELL TELEPHONE COMPANY OF EUROPE, LIMITED. Office, 34, Walbrook, London, E.C. Capital, £365,000, in fully paid Shares of £1. **R. H. KRAUSS, Esq.,** Secretary. Directors—Col. Gourand (Chairman), J. F. Bailey, Sir A. Armstrong, K.C.B., Sir J. Vogel, K.C.M.G. The Company carries on exchange business in various European countries, and has the sale of telephones for abroad under the Edison and Gower-Bell patents.

ELECTRIC NEWS-TELEGRAPH COMPANY, LIMITED. Chief Offices, 4, Ludgate Circus, London, E.C. Stock Exchange Offices, 4, Warnford-court, London, E.C. **JOHN COOPER, Secretary.** **WILLIAM J. BURNBIE, Esq.,** Managing Director. Directors—Sir Michael Kennedy, K.C.S.I. (Chairman), M. Lloyd, Q.C., M.P. The authorised capital is £150,000, in shares of £5, and £39,025 has been issued and paid up in full.

CHANGE TELEGRAPH COMPANY, LIMITED. Offices, 17 & 18, Cornhill, London, E.C. Capital, £213,000. **W. H. DAVIES, Managing Director.** Directors—C. H. Ashley, J. H. Hutchinson, H. L. Hotchkiss, H. Burt, C. S. Seyton. The capital consists of £60,000 in A. shares of £10, with £7 per share called up, and £153,000 in fully paid B shares of £10. The accounts are made up annually to June 30th.

GERMAN UNION TELEGRAPH COMPANY. London agency, 66, Old Broad-street, E.C. Reserve fund, 298,142 marks; Renewal fund, 281,638 marks; Carried forward, 1,689 marks. This company was established in Berlin in May, 1871, to carry out a concession from the Prussian Government for a term of 25 years from March 12th, 1869.

GERMAN UNION TELEGRAPH AND TRUST COMPANY, LIMITED. Offices, 66, Old Broad-street, London, E.C. Capital, £200,500. W. PAYTON, Esq., Secretary. Directors—Sir J. Anderson, J. D. Pender, Count O. Von Reichenbach, H. G. Erichsen. The accounts are made up annually to December 31st, and submitted in April. The Company is quoted in the official list.

GLOBE TELEGRAPH AND TRUST COMPANY, LIMITED. Offices, 66, Old Broad Street, London, E.C. W. PAYTON, Esq., Secretary. Directors—J. Pender, M.P. (Chairman), W. Ford, H. D. Gooch, Sir J. Anderson, Sir D. Gooch, Bart., M.P., Marquis of Tweeddale. The Capital consists of £1,713,370, 6 per cent. preference shares, and £1,715,230 ordinary shares, both of £10, and fully paid.

GREAT NORTHERN TELEGRAPH COMPANY OF COPENHAGEN. Head Office, 28, Kongens Nytorv, Copenhagen, K. Captain E. SUENSON, R.D.N., Managing Director; London Office, 119, Bishopsgate-street Within, London, E.C., F. C. C. NIELSEN, Manager; H. G. C. Bohr, J. Henningsen, general agents in China and Japan; Offices, Bund, Shanghai; H. G. Erichsen, The Company's Representative in England; Directors—C. F. Tietgen (Chairman), O. A. Broberg, L. P. Holmblad, Col. V. Hoskier, R.D.E., M. G. Melchoir, J. Sick, F. C. H. E. Tobiesen.

HAMBURG-HELGOLAND TELEGRAPH COMPANY. London Agency, 66, Old Broad-street, E.C. The capital of this Company consists of 900 shares, to bearer, of 300 thalers (£15) each, some of which are held here. Reserve fund, 1,121 marks.

HENLEY'S (W. T.) TELEGRAPH WORKS COMPANY, LIMITED. Offices, 8, Drapers' Gardens, London, E.C. G. SUTTON, Esq., Secretary; Directors—H. Alcock, W. T. Henley, A. Mongredien, E. Figgess, R. J. Jenkins, F. Newton, J. D. Walker. The Capital is £60,950 in fully-called shares of £10, and there are 7 per cent. mortgage debentures to amount of £15,000 with interest, payable March 1st, and September 1st.

INDIA RUBBER, GUTTA PERCHA, AND TELEGRAPH WORKS COMPANY, LIMITED. Office, 106, Cannon-street, London, E.C. W. J. TYLER, Esq., Secretary. M. GRAY, Manager. Directors—G. Henderson (Chairman), A. Bettie, M.D., N. Bannatyne, S. W. Silver. The capital is £312,000, in fully paid shares of £10, and there are 6 per cent. mortgage debentures to the amount of £100,000, and loans amounting to £57,320.

INDO-EUROPEAN TELEGRAPH COMPANY, LIMITED. 18, Old Broad-street, London, E.C. F. MOLL, Esq., Accountant and Secretary. W. ANDREWS, Esq., Managing Director. Official Directors—Herr Budde (Director-General of Telegraphs of the German Empire), General Von Lüders (Director-General of Imperial Telegraphs in Russia), H. Weaver, Esq. Directors—Colonel James Holland (Chairman), The Park, Upper Norwood, A. Delbrück, Esq., Berlin, C. W. Earle, Esq., Bryanstone-square, John Berenberg Gossler, Esq., Hamburg, H. H. Meier, Esq., Bremen, Major-General G. B. Tremeneere, R.E., Spring Grove, Isleworth, J. Herbert Tritton, Esq., 54, Lombard-street, E.C., H. Weaver, Esq., 26, Old Broad-street, E.C. Consulting Member—C. W. Siemens, Esq., F.R.S., D.C.L., 12, Queen Anne's-gate, Westminster, S.W.

LANCASHIRE AND CHESHIRE TELEPHONIC EXCHANGE COMPANY, LIMITED. Office, 38, Faulkner-street, Manchester. Capital £296,161 in fully paid shares of £1. K. MACIVER, Esq., Secretary and General Manager. Directors—C. Moseley (Chairman), E. Heyworth (Deputy-Chairman), C. S. Agnew, J. B. Morgan, J. Thompson, G. H. Robertson.

LONDON AND GLOBE TELEPHONE AND MAINTENANCE COMPANY, LIMITED. Offices, 31, Queen Victoria-street, London, E.C. Capital £600,000. JAMES FORB, Esq., Secretary; Léon Soulerin, Esq., 12, Rue Ste. Anne, Paris, Continental Director; Board of Directors—Stewart Pixley, Esq., (Chairman), F. Formby Back, Esq., Robert Ewing, Esq., John Glas Sanderman, Esq., J. T. F. Otway, Esq.; Consulting Electricians—Professor Silvanus P. Thompson, B.A., D.S., F.R.A.S., Alexander Muirhead, Esq., D.S., F.C.S.; Electricians—Geo. L. Anders, Esq., J. B. Henck, Jun.

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NDON, PLATINO - BRAZILIAN TELEGRAPH COMPANY, LIMITED.

Offices: 66, Old Broad-street, London, E.C. W. PAYTON, Esq., Secretary; Directors—J. Pender (Chairman), J. Hollocombe, and F. Pavy. Capital, £383,480, in fully paid shares of £10. There is also £100,000 in 7 per cent. debentures of £100 with coupons attached, payable the 1st of March and September, and redeemable March, 1884.

ONTEVIDEAN AND BRAZILIAN TELEGRAPH COMPANY LIMITED.

Offices: 2, Tokenhouse-buildings, London, E.C. Capital £89,140 in fully paid shares of £10, £13,380 debentures. J. FRASER, Secretary; Directors—Sir T. G. Browne, K.C.M.G., C.B., (Chairman), C. Cameron, M.P., Lieut.-Col. G. W. Macauley.

ATIONAL TELEPHONE COMPANY, LIMITED. Office: 11, Queen Victoria

Street, London, E.C. The capital consists of £450,000 fully paid ordinary shares of £5, and £150,000 in 6 per cent. cumulative preference shares of £10, of which 2,780 shares are fully paid, and 12,220 have £6 paid. W. B. CAMPBELL, Esq., Secretary; Directors—Col. R. R. Jackson (Chairman), J. P. Bigelow (Vice-Chairman), Hon. G. G. Hubbard, J. Bruce, W. Lowson, S. D. Williams, P. Garnett, T. A. Dickson, M.P., J. Garnett, W. A. Smith, W. H. Bradbury, S. H. Sands, J. F. Harrison, J. H. Agnew and J. B. Morgan.

ATIONAL TELEPHONE COMPANY, LIMITED, MIDLAND DISTRICT.

Offices, Wellington Chambers, 40, Bennett's-hill, Birmingham. W. L. BISHOP, District Manager, 40, Bennett's-hill, Birmingham; F. BROWN, Walsall, Wednesbury, and Wolverhampton Manager, The Bridge, Walsall. Local Board—S. D. Williams, Woodgate, Malvern (Chairman); Herbert Chamberlain, Vicarage-road, Edgbaston, Birmingham (Vice-Chairman); Henry Lea, M.I.C.E., 38, Bennett's-hill, Birmingham; E. G. Capon, Union Passage, Birmingham, and Lifford Mills, King's Norton; E. B. Marten, C.E., Stourbridge; Professor J. H. Poynting, M.A., Mason Science College, Birmingham.

ORTHERN DISTRICT TELEPHONE COMPANY, LIMITED. Offices, Exchange

Buildings, Quay Side, Newcastle-upon-Tyne; and Arcade Chambers, Sunderland. Capital, £100,000. T. A. SIMPSON, Secretary; WILLIAM EDWIN IRISH, Manager; The National Provincial Bank of England, Limited, and Branches, Bankers; R. Routledge, Frederick Lodge, Sunderland, Solicitor; Messrs. Billett & Blaikie, 5, Copthall Buildings, London, Messrs. W. H. Challoner & Co., Sunderland, Brokers; B. Smyrke, Chartered Accountant, John-street, Sunderland, Robert S. Blease, 25, Castle-street, Liverpool, Auditors. Directors—Charles Holloway Reed, J.P., iron manufacturer, Sunderland (Chairman); William Henry Dixon, shipowner, Sunderland (Vice-Chairman); Samuel Alcock, Solicitor, Sunderland; James Henry Wood Culliford, shipowner, Sunderland and London; Ralph Milbanke Hudson, jun., shipowner, Sunderland; Joseph Bond Morgan, Managing Director of United Telephone Company, 36, Coleman-street, London, E.C. (nominated by The United Telephone Company, Limited, under Agreement); Thomas Wilson, shipowner, Sunderland. Under Licence from The United Telephone Company, Limited, who are sole proprietors of the Master Patents covering the Bell, Edison, Crossley, Gower-Bell, and other patents for the United Kingdom. Registered under the Companies' Acts, 1862 to 1880.

IENTIAL TELEPHONE COMPANY, LIMITED. Offices, 3, Great Winchester-

street, London, E.C. Nominal Capital (£1 shares) £300,000, Subscribed Capital £297,990, Paid up Capital £187,990. W. G. HALL, Esq., Secretary. Directors—Jno. Pender, Esq., M.P. (Chairman), Colonel Gouraud (Vice-Chairman), Sir Julius Vogel, K.C.M.G., Sir Alexander Armstrong, K.C.B., &c., Patrick Carnegie, Esq., C.I.E., John P. Bigelow, Esq., W. W. Cargill, Esq., Professor T. A. Edison, James Pender, Esq., Hon. G. G. Hubbard.

UTER'S TELEGRAM COMPANY, LIMITED. London Offices, 24, Old Jewry,

E.C. Directors—Colonel James Holland (Chairman); Admiral the Right Hon. Sir C. D. Hay, Bart, M.P.; Baron de Reuter; James Sydney Stopford, Esq.; Herbert de Reuter, Esq. (Managing Director). The Company was established in 1865. The capital is £72,000 in fully paid up shares of £8. The accounts are made up annually to December 31st., and submitted in April.

VER PLATE TELEPHONE AND ELECTRIC LIGHT COMPANY, LIMITED.

Registered Offices, 34, Walbrook, E.C. Capital, £100,000 in £5 shares (£80,000 9% Preferred and £20,000 Deferred). Directors—Colonel G. E. Gouraud (Chairman); Sir Julius Vogel, K.C.M.G.; Patrick Carnegie, Esq., C.I.E.; Hon. Howard Spensley; Sir Alex. Armstrong, K.C.B.; Edward Laurel Powers, Esq. (Managing Director in the River Plate). Local Board in Buenos Ayres and Monte Video—Charles H. Sanford, Esq. (Messrs. Samuel B. Hale and Co.), Buenos Ayres; Señor Don Francisco Seeber; Señor Don Carlos Sagnier.

SIEMENS BROTHERS AND COMPANY, LIMITED. Office, 12, Queen Anne's Gate, London, S.W. The subscribed capital is £500,000 in shares of £100, of which £37 or £75 per share is paid up. A. SABINE, Secretary. Directors—Dr. W. Siemens, of Berlin (Chairman); C. H. Siemens and L. Loeffler (Managing Directors). The accounts are made annually to December 31st, and submitted in April.

SPANISH NATIONAL SUBMARINE TELEGRAPH COMPANY, LIMITED. Office, 106, Cannon Street, London, E.C. Share capital £500,000 in £10 shares; Debentures, £140,000. WILLIAM J. TYLER, Secretary. Directors—Count Thadée d'Olszka, 1st Duke of Olszka; Owen Lewis, Francis Anderson, George Henderson, Stephen Wm. Silver, Matthew Cables, &c.: From Cadiz to Teneriffe, Grand Canary, Lauzarote, and La Palma, and from Teneriffe to St. Louis, Senegal.

STANDARD TIME AND TELEPHONE COMPANY, LIMITED, 19, and 21, Queen Victoria-street, London, E.C. Capital, £100,000. EDGAR RAY, Secretary; JOHN LUND, M.S.T.E., Managing Director; LATIMER CLARKE, Esq., M.I.C.E., Consulting Engineer; Directors—Hon. Howard Spensley (Chairman), Frederick William Manson, The Standard Time and Telephone Company design and construct Time Balls, Time Flashes and other Signals for Government, Observatory, Railroad and private Time Service. They are the sole owners of Barraud and Lund's patents, which can be applied at a small expense to any clocks now in use, and which form the basis of the completely successful system of Synchronized Clocks. They will receive proposals for the sale of the rights to or manufacture the patents controlled by them in Provincial Towns and elsewhere, and for the extension of their existing Greenwich Mean Time system in London, either for time signals, or for synchronizing existing clocks, being a Time Service by Electric Clocks worked under contract with Her Majesty's Postal Telegraph Department. They are also prepared to sell or hire Royalty paid loud-speaking Gower-Bell Telephones, and to erect and maintain the needful telegraph lines in connection therewith. Descriptive circulars furnished on application to The Standard Time and Telephone Company, Limited, 19 and 21, Queen Victoria-street, London, E.C.

SUBMARINE CABLES TRUST. Offices, 66, Old Broad-street, London, E.C. Capital £420,000. LEWIS WELLS, Esq., Secretary; Trustees—Sir James Anderson, Sir John Gooch, Bart., M.P., The Right Hon. Viscount Monck, John Pender, Esq., M.P., The Hon. The Marquis of Tweeddale.

SUBMARINE TELEGRAPH COMPANY, LIMITED, between Great Britain and the Continent of Europe. Offices, 2, Throgmorton Avenue, London, E.C. Capital £330,000. Directors—Sir Julian Goldsmid, Bart. (Chairman), The Rt. Hon. Robert Bourke, M.P., The Hon. Ashley Ponsonby, Hon. E. C. Leigh, Q.C.

TELEGRAPH CONSTRUCTION AND MAINTENANCE COMPANY, LIMITED. Offices, 38, Old Broad Street, London, E.C. Capital, £448,200. E. DICKENS, Esq., Secretary. Directors—Sir D. Gooch, Bart, M.P. (Chairman), Sir T. Fairbairn, Bart., P. Rawson, Esq., Campbell, Sir G. Elliott, Bart, M.P., Lord A. Paget, Vice-Admiral Sir G. H. Richards, and W. SHUTER (Manager). The company was formed in 1864 to take over the telegraph manufacturing business of Messrs. Glass, Elliott and Co., and of the Gutta Serena Company.

TELEPHONE COMPANY OF AUSTRIA. Registered office, 34, Wall Street, London, E.C. Capital £100,000 in shares of £5 each. Directors—Colonel G. E. Gooch, Hon. Howard Spensley, Sir Julius Vogel, K.C.M.G.

TELEPHONE COMPANY OF EGYPT, LIMITED. (Société anonyme des Téléphones d'Egypte), 3, Great Winchester Street, London, E.C. Capital £100,000 in 20,000 shares of £5 each. W. G. HALL, Esq., Secretary. Directors—Lieut.-Gen. A. Fraser, C.B. (Chairman), James Pender, Esq., Col. G. E. Gouraud. Object.—To develop and carry on the telephone industry in Egypt. Development.—Exchanges have been established in Cairo and Alexandria. Also a large number of private lines have been erected in the same places.

TELEPHONE COMPANY OF IRELAND, LIMITED, under Licence from the United Telephone Company, Limited. Registered under the Companies' Acts, 1862 to 1880. Head Office, Commercial Buildings, Dame Street, Dublin; London Office, The United Telephone Company, Limited, 36 Coleman Street, E.C. Capital £250,000, divided into 75,000 preference shares of £1 each, and 175,000 ordinary shares of £1 each. JAMES F. BUTTERWORTH, Secretary; The National Bank, Limited, Old Broad Street, London, E.C., and College Green, Dublin, Bankers; Messrs. V. B. Dillon & Co., 7, Rutland Square, Dublin, Solicitors; Messrs. Kevans and Kean, Dame street, Dublin, and Robert Blease, Esq., Fenwick Street, Liverpool, Auditors. Directors—E. Dwyer Gray, Esq., M.P., Pembroke House, Dublin, Chairman; John Bailey, Esq., 4, Clifton Terrace, Monkstown, Co. Dublin; Arthur Dudgeon, Esq., 32, Merriam Square, North, Dublin; Hermann G. Erichsen, Esq., 119, Bishopsgate Street Within, London, E.C.; James Winstanley, Esq., Drommartin House, Dundrum, Co. Dublin; Joseph Bond Morgan, Esq., 36, Coleman Street, London, E.C., Representative of the United Telephone Company. This company was formed in the year 1882 under an agreement with the United Telephone Company, Limited, whereby this company acquired the licence for the introduction and application of telephones, for the working of telephonic exchanges in Ireland (excluding the province of Ulster), and for the working, letting on hire, and selling telephones, and all other work incidental or conducive to the development of telephonic communication. An Exchange having over 500 subscribers is now in operation in Dublin, yielding already, although the company has been but little over twelve months in existence, a gross revenue at the rate of about £6,000 per annum, and the number of subscribers is increasing each week. In addition to the revenue from the exchange, a large income is derivable from subscriptions for private wires, the income from which already exceeds £1,000 per annum, and is expected to increase very greatly.

UNITED TELEPHONE COMPANY, LIMITED. T. BLAICKIE, Secretary; JOSEPH B. MORGAN, Esq., Managing Director. Directors—James Brand, Esq. (Chairman), James Staats Forbes, Esq. (Deputy Chairman), John Henry Agnew, Esq., John W. Batten, Esq., Col. Gouraud, Dillwyn Parrish, Esq., W. Cuthbert Quilter, Esq. The Share Capital is £500,000 in £5 shares, 80,000 of which are fully paid shares, and 20,000 part paid shares. (20,000 new shares issued at £2 premium, upon which there has been called up £2 account capital, £1 account premium; still remaining uncalled, £3 account capital, £1 account premium).

EAST COAST OF AMERICA TELEGRAPH COMPANY, LIMITED. Office, 98, Cannon-street, London, E.C., F. L. Robinson, Secretary; Directors—R. Kendal, Esq. (Chairman), M. Gray, Esq., W. E. MacAndrew, Esq., T. F. Campbell, Esq. The Capital is £300,000 ordinary shares of £10 fully-paid, and £150,000 8% debentures of £100, with coupons payable June 30th, and December 31st. The cables and land lines, 1,717 nautical miles, extend from Valparaiso (Chili), to Lima (Peru), touching at Serena and Caldera (Chili), Antofagasta (Bolivia), Iquique, Arica, and Mollendo (Peru), connecting with the cables and landlines of the Central South American Telegraph Company, and the Mexican Telegraph Company, between Lima and Galveston (United States). Messages by this route must be marked "via Galveston."

EAST INDIA AND PANAMA TELEGRAPH COMPANY, LIMITED. Offices: Dashwood House, 9, New Broad-street, London, E.C. Incorporated 9th January, 1877. Mr. R. T. BROWN, Secretary; Sir SAMUEL CANNING, 3, Great Winchester-street-buildings, E.C., Engineer; Directors—C. W. Earle, Esq. (Chairman), Sir James Anderson, William Andrews, Esq., Cyrus W. Field, Esq. (Nominee of the International Ocean Telegraph Company), William Ford, Esq., Henry Holmes, Esq., Henry Weaver, Esq.; Solicitors, Messrs. Bircham & Co., 26, Austin Friars, E.C.

EASTERN AND BRAZILIAN TELEGRAPH COMPANY, LIMITED, 19, Great Winchester-street, London, E.C. Capital, 45,756 ordinary shares, of £15 each, £686,340; 24,154 preferred ordinary shares, of £7 10s. each (5% accumulative), £181,155; 24,154 deferred ordinary shares, of £7 10s. each, £181,155, total £1,048,650. Debentures, 6% 2,000 "A" debentures, of £100 each, £200,000; 6% 2,500 "B" debentures, of £100 each, £250,000, total £450,000. R. M. CUNNINGHAM, Secretary; MAJOR WOOD, Managing Director; Directors—Sir Henry Drummond Wolff, G.C.M.G., K.C.B., M.P. (Chairman), W. S. Andrews, Esq., C. W. Earle, Esq., D. H. Goodsall, Esq., and H. Weaver, Esq.

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 PARTICULARS OF CAPITAL, &c.

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WITH

NAMES OF DIRECTORS, PARTICULARS OF CAPITAL,

ANGLO-AMERICAN BRUSH ELECTRIC LIGHT CORPORATION, LIMITED
 Offices, Belvedere-road, Lambeth, London, S.E.; Works, Vine-street, York-road, I. S.E.; Mansfield-street, Borough-road, London, S.E.; Portpool-lane, Gray's Inn-road, I. W.C. Capital £800,000 (13,701 £10 shares fully paid up, £137,010; 26,999 £8 shares p. £215,992. Total, £353,002.) EMILE GARCKE, Esq., Secretary. FRANK WYNNE, General Manager. Directors—The Right Hon. Lord Thurlow, Chairman, J. S. Sells (of Johnson, Matthey & Co.), Vice-Chairman, W. Ladd, Esq., F.R.A.S., E. Woods V.-P. Inst. C.E., Colonel Frederick G. Steuart, John Irving Courtenay, Esq., Herl Gibbs, Esq. (of Messrs. Antony Gibbs & Sons). Chief Electrician, R. Percy Sells. Telegraphic address, "Magneto," London.

ANGLO-SPANISH "BRUSH" ELECTRIC LIGHT AND POWER COMPANY, LIMITED (Brush system of Electric Lighting and Lane-Fox Incandescent Lamp). 110, Cannon-street, London, E.C. Capital £44,535 in £5 shares. J. N. GROVE, Sec. Directors—Edmund Etlinger, Esq., Director of the Direct Spanish Telegraph Co. Limited, Rear-Admiral Brooker, C.B., 67, Eardley-crescent, South Kensington, S.W.; Kincaid, Esq., M. Inst. C.E., 11, Great George-street, Westminster, S.W. Madrid Committee—His Excellency Señor Don José Echegaray, Ex-Minister of Finance, His Ex. Señor Don Luis de Rute, Sub-Secretary of the Home Department, Captain (Spilsbury), 9, Ferraz, Madrid. Bankers—Messrs. Brown, Janson & Co., 62, King W. street, London, E.C. Solicitors—Messrs. Walter Webb & Co., 23, Queen V. street, E.C. Auditors—Messrs. Price, Waterhouse & Co., 44, Gresham-street, E.C. Company is formed to carry on in the kingdom of Spain and in its important colonies Cuba, Porto Rico, and the Philippines the business of supplying and enabling its licensees supply Electricity for the purposes of Electric Lighting, Motive Power, Chemical Decomposition and other applications for which it is suitable.

AUSTRALASIAN ELECTRIC LIGHT, POWER AND STORAGE COMPANY, LIMITED. Offices, 41, Coleman-street, London, E.C. Capital, £150,000. J. H. DEXA, Secretary. Directors—R. C. Want (Chairman), L. Clark, J. J. Cater, P. Falk, Lieut.-Col. H. M. Hamilton, C.B.

BRITISH ELECTRIC LIGHT COMPANY, LIMITED. Capital, £72,210. Offices and Works, Turk's Head-yard, Turnmill-street, London, E.C. R. P. MILNE, Sec. Directors—J. Hubback (Chairman), Edward Easton, E. B. Bright, Major-Gen. Sir Green, K.C.S.I., C.B., F. Walters. Has paid a dividend of 10 per cent. in 1880-1.

BRITISH INSULITE COMPANY. Office, 20, Coleman-street, London, E.C. Capital, £118,820. M. C. GREENHILL, Secretary. Directors—Right Hon. E. P. B. (Chairman), J. Drummett, E. Easton, C.E., Dr. J. A. Fleming, M. M. Moore, Sir Rickards.

BRUSH MIDLAND ELECTRIC LIGHT AND POWER COMPANY, LIMITED
 Offices, 4, Great Winchester Street Buildings, London, E.C. Capital, £112,110. H. N. Secretary; Glyn, Mills, Currie, & Co., 57, Lombard-street, London, E.C., Bankers; Fradd, Manager; B. M. Drake, Engineer and Electrician. Directors—Richard H. Glyn, Esq., J.P., Newport, Monmouthshire; John Padbury Gillett, Esq., Banbury, Oxon; the Hon. Fulke Greville, Brooks's Club, London, W.; James Pender, Esq., Rushmore, Leighton Buzzard. Sole Concessionaires for the Brush System for Cheshire, Nottinghamshire, Shropshire, Montgomeryshire, Merionethshire, Carnarvonshire, Denbighshire, Flintshire, Lincolnshire, Oxfordshire, Northamptonshire, Leicestershire, Berkshire and Anglessea.

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STERN ELECTRIC LIGHT AND POWER COMPANY, LIMITED. Offices, 19, Great Winchester Street, London, E.C. Walter Jackson, Secretary. Directors—Ernest Noel, Esq., M.P. (Chairman), General H. D. Abbott, C.B., Latimer Clark, Esq., Alexander McArthur, Esq., M.P., James Pender, Esq., Major C. H. Strutt (Managing Director).

ISON AND SWAN UNITED ELECTRIC LIGHT COMPANY, LIMITED. 74, Coleman-street, London, E.C. Capital, £1,000,000, divided into 150,000 A shares of £5 each, and 50,000 B shares of £5 each. Major S. Flood-Page, Secretary. Directors—James Staat Forbes, Esq. (Chairman), Viscount Anson (Deputy Chairman), E. W. Batt, Esq., Shelford Bidwell, Esq., F. R. Leyland, Esq., Major-General J. S. Trevor, Captain E. Villiers, Arnold H. White, Esq.

ISON'S INDIAN AND COLONIAL ELECTRIC COMPANY, LIMITED. Offices, 4 and 6, Throgmorton-avenue, London, E.C. Capital, £250,000. J. F. Tape, Esq., Secretary; Major S. Flood Page, General Manager. Directors—Marquis of Tweeddale (Chairman), H. Schlesinger, Sir G. Warrender, Bart., Hon. W. St. J. F. Brodrick, M.P., Colonel the Hon. W. Le P. Trench, V. N. B. Barrington-Kennett.

ELECTRIC SUN LAMP AND POWER COMPANY, LIMITED. Offices, St. Margaret's-chambers, Victoria-street, London, S.W. Capital, £38,795 in ordinary shares of £5; 50,000 in fully-paid deferred shares of £5. J. Reeve, Esq., Secretary. Directors—Lord Brabourne (Chairman), R. Milburn, G. C. T. Bartley, E. Gilman.

ELECTRICAL INSULATOR MANUFACTURING COMPANY, LIMITED. Offices, 31, Lombard-street, London, E.C. Capital £100,000 in shares of £1. E. H. Wilson, Esq., Secretary. Directors—J. I. Minchin (Chairman), A. R. Robinson, W. J. Lamb, J. B. Foote.

ELECTRICAL POWER STORAGE COMPANY, LIMITED. Offices, 4, Great Winchester-street, London, E.C. Capital £529,800 in 264,900 shares of £2 each, fully paid. H. Dell, Secretary; T. M. Collett, General Manager. Directors—Sir Daniel Cooper, Bart., K. C. M. G. (Chairman), John Scudamore Sellon (Vice-Chairman), John Irving Courtenay, Frederick Green, William Ladd, Colonel F. G. Steuart, Ernest Volckmar. The accumulators or secondary batteries supplied by this Company are constructed under the Faure-Sellon-Volckmar Patents. The price charged is at the rate of £3 12s. per E.H.P. hour.

FAURE ELECTRIC ACCUMULATOR COMPANY, LIMITED. Offices, 71, Queen-street, Queen Victoria-street, London, E.C. Capital £1,000,000. H. Canning, Esq., Secretary. Directors—B. Armieux, Baron E. L. de Maubeuge, Col. E. de Barolet, E. H. Cadot.

FRENCH ELECTRICAL POWER STORAGE COMPANY, LIMITED. Office, 71, Queen-street, London, E.C. H. Gislain, C.E., Secretary. Directors—Van der Elst, Paris, Baron C. L. de Maubeuge, Paris, S. Philippart, Paris. Capital £75,000 in ordinary shares of £1; £1,000,000 in 6% cumulative preference shares of £10, redeemable at £20 per share in 30 years from the date of issue by annual drawings. The preference dividend is guaranteed by the Faure Company.

FRENCH METROPOLITAN GENERAL ELECTRIC COMPANY, LIMITED, Office, 71, Queen-street, London, E.C. Capital £1,200,000 in shares of £10. H. Gislain, Secretary. Directors—E. H. Cadot, B. Armieux, S. Philippart.

GERARD AND COMPANY, LIMITED, Electric Light Engineers and Contractors, 11, Queen Victoria-street, London, E.C. Capital, 3,000 £10 ordinary shares, £30,000; 1,000 £10 preference shares, £10,000; total, £40,000. Directors—Col. R. R. Jackson (Chairman), Wm. Alex. Smith, T. Faithful Bigg, J. G. Lorrain, John Bruce, Jean M. A. Gérard, Lescuyer, G. Nussbaum. W. J. Monfrizes, Secretary. Patentees of dynamos, arc lamps, incandescent lamps, &c.

GREAT WESTERN ELECTRIC LIGHT AND POWER COMPANY, LIMITED, for the Counties of Gloucester, Somerset, Dorset, Wilts, Monmouth, Glamorgan, Pembroke, Carmarthen, Radnor, Brecon and Hereford. Office, 4, Great Winchester-street-buildings, London, E.C. Capital £120,295 in shares of £5. ALEXANDER SMITH, Secretary. Consulting Electrician—P. Jolin. Directors—C. Bell, J. B. Braithwaite, F. W. Reynolds, C. H. Stewart.

GÜLCHER ELECTRIC LIGHT AND POWER COMPANY, LIMITED
Coleman-street, Bank, London, E.C. Works, Battersea Foundry, S.W. Capital £250,000. **RUSSELL DAY**, Esq., Secretary. **F. GILMAN**, General Manager. Directors—**W. C. F.R.S.** (Chairman), **D. De Castro**, Major **J. W. M. Cotton**, **M. Cornell**, **D. Johnson**, **Link**, **W. Wallace**.

HAMMOND ELECTRIC LIGHT AND POWER SUPPLY COMPANY, LIMITED
110, Cannon-street, London, E.C. Branch Offices—Leeds, Manchester, Middlesbrough, Glasgow. Capital £250,000. **PHILIP A. LATHAM**, Secretary. Directors—**Sir Lawrence Young**, Bart., **Hon. Sidney Carr Glyn**, M.P., **Rhodes Cobb**, **Robert H. (Managing)**, **Francis Ince**, **Walter Low**.

HASTINGS AND ST. LEONARD'S-ON-SEA ELECTRIC LIGHT COMPANY, LIMITED. Office, 63, Cambridge-road, Hastings. Capital, £8,500 in fully paid-up shares of £10. **F. A. LANGHAM**, Secretary. Directors—**H. M. Baker** (Chairman), **J. Catt**, **G. C. F. Noakes**, **J. Reeves**, **W. L. Vernon**, **J. Woodhams**.

HENLEY'S (W. T.) ELECTRIC LIGHT AND POWER COMPANY, LIMITED
Office, 8, Drapers'-gardens, London, E.C. The authorised capital is £100,000 in shares of £10. Directors—**C. K. Dyer**, **F. A. Fane**, **R. Hewitt** and **F. Newton**.

INDIAN AND ORIENTAL ELECTRICAL STORAGE AND WORKS COMPANY, LIMITED. Offices, 19, Great Winchester-street, London, E.C. Capital, £150,000 in shares of £5. **H. C. Heywood**, Esq., Secretary. Directors—**E. Noel**, M.P. (Chairman), **F. G. Steuart**, **J. S. Trotter**, **W. M. Bullivant**, **A. McArthur**, M.P., Major **C. H. Strutt**. Company is quoted in the official list.

INSULITE COMPANY, LIMITED. Offices, 50, Parliament-street, London, E.C. Capital, £20,000. **F. SANDERS**, Secretary. Directors—**E. Easton** (Chairman), **Rigby**, **E. P. Bouverie**, **A. H. Huth**, **M. M. Moore**, **F. Walters**, **A. White**.

INTERNATIONAL ELECTRIC COMPANY, LIMITED. London Office, 4, Colindale Avenue, buildings, E.C.; Vienna office, 1 Karntnerstrasse, 43; Vienna works, Simmering. **FRANK SCHLOSSER**, Secretary. Directors—**Sir W. H. Stephenson**, K.C.B. (Chairman), **Baden Powell**, **C. de Kierzkowski-Steuart**, **St. G. Lane-Fox**, and **Hon. A. S. Johnston**. Authorised Capital is £500,000 in shares of £5, and £132,000 has been issued.

JABLOCHKOFF ELECTRIC LIGHT AND POWER COMPANY, LIMITED
Offices, 1, Great Winchester-street, E.C. **F. R. REEVES**, Esq., Secretary. Directors—**Wilson** (Chairman), **C. J. Taylor**, **Sir J. N. McKenna**, M.P., **J. H. Evans**, **A. R. M. T. Lawrence**, **H. E. Rodwell**, **W. Myers**. Capital, £194,805 in fully paid shares of £3. There are also 7 per cent. debentures amounting to £25,000.

LANCASHIRE MAXIM-WESTON ELECTRIC COMPANY, LIMITED.
56, New Broad-street, London, E.C. Capital, £25,000. **T. R. COMYX**, Secretary. Directors—**Earl de la Warr** (Chairman), **Admiral Sir E. A. Inglefield**, C.B., **J. Roberts**, **T. White**.

MAXIM-WESTON ELECTRIC COMPANY, LIMITED. Offices, 47, Colindale Avenue, buildings, London, E.C. Works, Bankside, E.C. Capital, £500,000; paid up, £200,000. **BRYAN**, Esq., Secretary. Directors—**Samuel Gray**, Esq. (Chairman), **Louis Swaby**, Esq., **Brown**, Esq., **Hugh Watt**, Esq. (Managing Director).

METROPOLITAN BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED. Offices, 110, Cannon-street, London, E.C. Capital £500,000 in shares of £10. **ROBERT WILSON**, Esq., Secretary. **I. KEETINGE-POLLOCK**, Esq., Manager. Bankers—**Consolidated Bank, Limited**, 52, Threadneedle-street, London, E.C. Brokers—**Woolley, Lowndes & Co.**, 7, Finch-lane, London, E.C. Solicitors—**Messrs. Walter Webb & Co.**, 23, Queen Victoria-street, London, E.C. Auditors—**Messrs. Price, Waterhouse, & Co.**, Gresham-street, London, E.C. Directors—**Sir Michael Kennedy**, R.E., K.C.S.I., 66, Pall Mall, London, W. (Chairman), **J. H. Boorer**, C. Tottenham, **Arthur R. C. Director**, Bank of Egypt, **Thomas Dickson**, Esq., Norwood-hill, Upper Norwood, S.E., **Charles Day Rose**, Esq., Bartholomew House, London, E.C., **E. Easton**, **J. Kincaid**.

ATIONAL COMPANY FOR THE DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS, LIMITED. Offices, 18, Warwick-street, Regent-street, London, W. Capital £500,000 (50,000 shares of £10 each). J. E. PICKERING, Secretary; Directors—William D'Ogby, Esq., Major J. Dixon Mackenzie, J. Dixon Gibbs, Esq., Lucien Gaulard, Esq., Maurice Le Foz, Esq.

ETHERN ELECTRIC LIGHT, POWER AND APPLIANCES COMPANY, LIMITED. Offices, 104, Commercial-street, Dundee; Works, 103, Victoria-road, Dundee, A. MACKAY, Secretary; Oliver Loring, B.A., Electrician; Mackay & Meas, Chartered Accountants, Dundee; Directors—John Leng, Newspaper Proprietor (Chairman), Geo. Halley (W. Halley & Sons), Spinner, Dundee, J. M. Kuiller (J. Kuiller & Sons), Wholesale Confectioners, Dundee, T. Smieton (J. Smieton & Sons), Spinner, Dundee, J. M. White (J. F. White & Co.), Merchant, Dundee. Capital, £100,000 in 100,000 shares of £1 each. First issue of 10,000 shares upon which there has been paid on Allotment, 5s.; 1st Call, 2s. 6d. Telegraph Address, "Mackay Dundee."

ILSEN," "JOEL," AND GENERAL ELECTRIC LIGHT COMPANY, LIMITED.

Offices, St. Stephen's-chambers, Telegraph-street, London, E.C. E. T. GREGORY, Esq., Secretary. Bankers—Messrs. Barclay, Bevan, Tritton and Co., 54, Lombard-street, E.C. Solicitors—Messrs. Parker, Garrett and Parker, St. Michael's Rectory House, London, E.C. Brokers—Messrs. Ellis & Co., 2, Royal Exchange-buildings, London, E.C. Directors—Sir Rawson W. Rawson, K.C.M.G., C.B., 68, Cornwall-gardens, S.W.; Frank P. Fellows, Esq., F.S.A., F.S.S., Reform Club, S.W.; Horace W. Scriven, Esq. (Messrs. Paley, Scriven and Co.), 34, Great St. Helen's, E.C.; John Goddard, jun., Esq., Director North Metropolitan Tramways Company, Limited; Dillwyn Parrish, Esq., Director United Telephone Company, Limited; J. Fyfe, Esq., 56, Fellows-road, N.W. Capital £200,000 in £5 shares, of which £130,000 is paid up, 12,000 shares being fully paid, and 28,000 £2 10s. paid. Company registered May 15, 1882, to acquire patents for Pilsen, Joel, and Gatehouse lamps, and Schucker's dynamo for United Kingdom and colonies. Accounts are made up annually to June 30. Transfer deed common. Fee, 2s. 6d. Partly paid shares are quoted in Stock Exchange Official List.

OVINCIAL BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED. Offices, 110, Cannon-street, London, E.C. A. JERMYN, Secretary; GEORGE OFFOR Manager. Directors—Genl. Sir M. Kennedy, R.E., K.C.S.I., F. Fesser, R. Cunningham, T. Fry, H. T. Sankey, C. Wapshare. The Company was registered May 8th, 1882, with power to issue £200,000 in shares of £5. The amount issued is £99,205 and £49,602, or £2 10s. per share is called up.

TH AFRICAN "BRUSH" ELECTRIC LIGHT AND POWER COMPANY, LIMITED. Offices, 5, Copthall-buildings, London, E.C. Capital, £100,000, in 20,000 shares of £5 each. T. J. SEEL, Esq., Secretary; D. MACDONALD, Esq., C.E., Colonial Manager. Electricians at Kimberley and Cape Town—Messrs. W. W. Biddulph and W. Gammage. Bankers—Messrs. Barclay, Bevan & Co., 54, Lombard-street, E.C. In the Colony—The Bank of Africa, Limited. Directors—Lieut.-Colonel George Coxon, 55, St. Charles-square, Notting-hill, W.; Thomas Dickson, Esq., Director of the "Brush" Electric Light and Power Company of Scotland, Richmond House, South Norwood, S.E.; Porter Rhodes, Esq., 8, Harley-street, Cavendish-square, W., and Kimberley; John Williams Anderson, Esq. (of Messrs. Blaine, Macdonald & Co.), 2, Suffolk-lane, E.C.; Charles Edward Atkinson, Esq. (of Messrs. Atkinson, Smith & Blight), 11, Clement's-lane, E.C.; and Port Elizabeth.

TH EASTERN BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED. Office, 110, Cannon-st., London, E.C. Capital £98,000. A. JERMYN, Esq., Secretary. GEO. OFFOR, Esq., Manager. Directors—General Sir M. Kennedy, R.E., K.C.S.I. (Chairman), F. Fesser (Vice-Chairman), R. Cunningham, T. Fry, H. T. Sankey, C. Wapshare.

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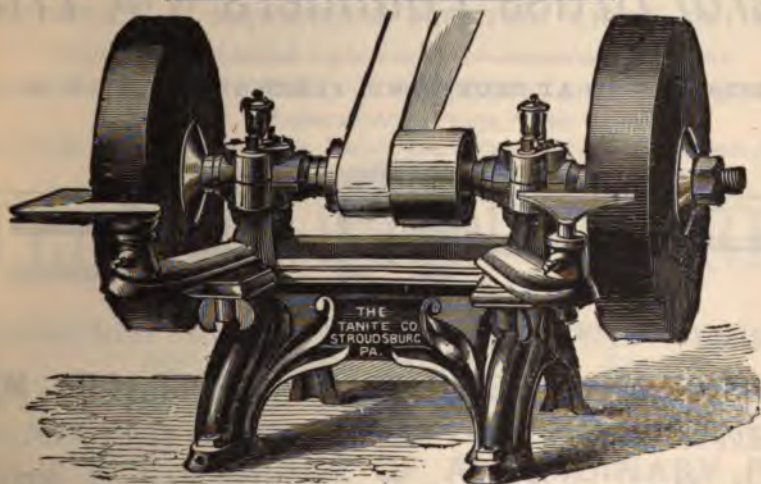
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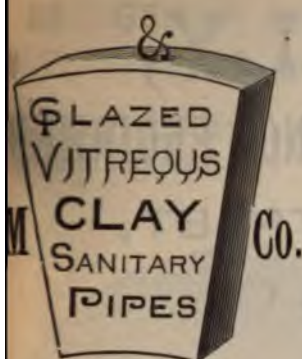
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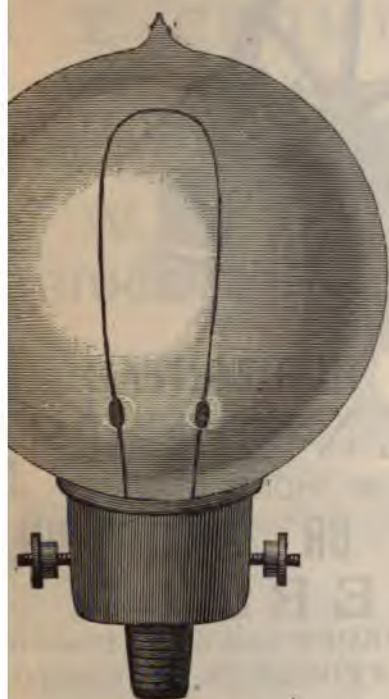
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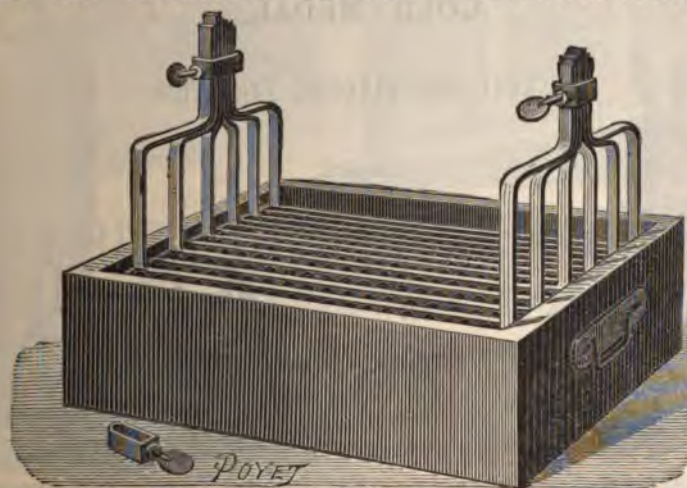
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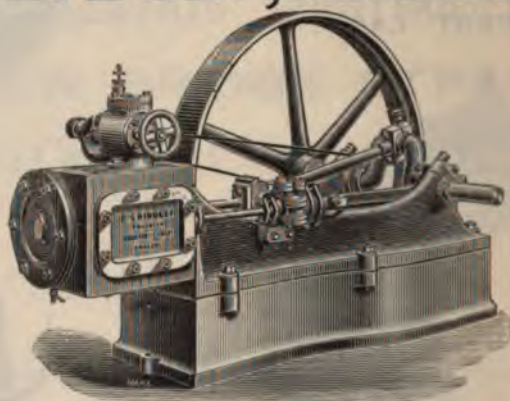


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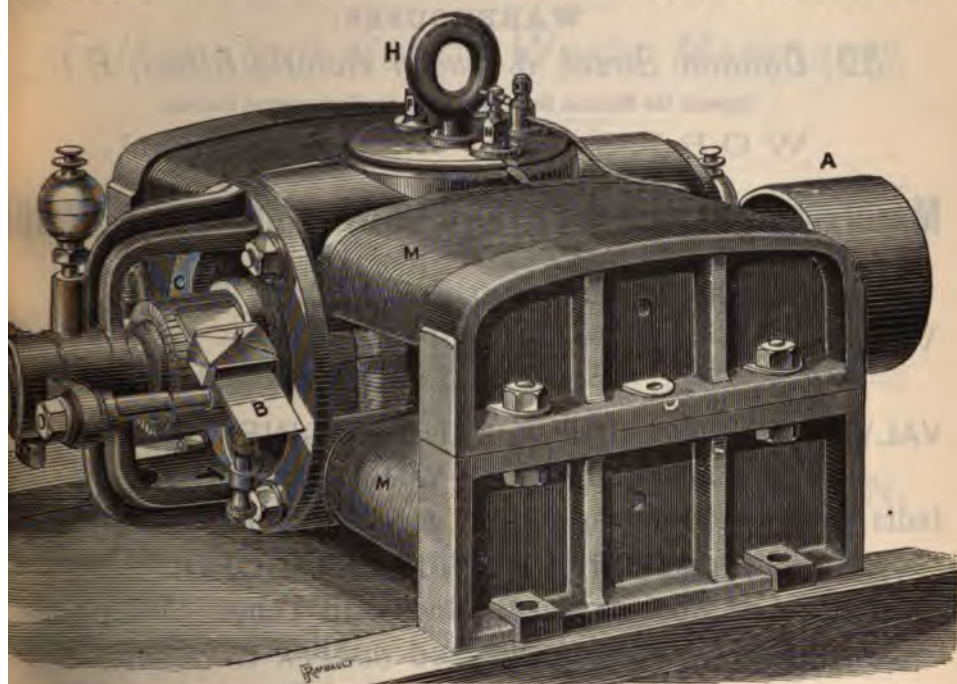


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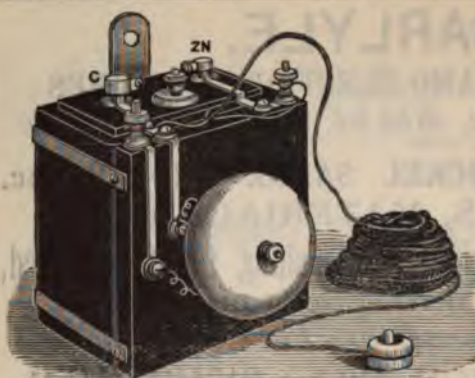
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BELTING, suitable for ELECTRICAL MACHINES, as supplied  
for JABLOCHKOFF, BRUSH, JAMIN, MAXIM, and other well  
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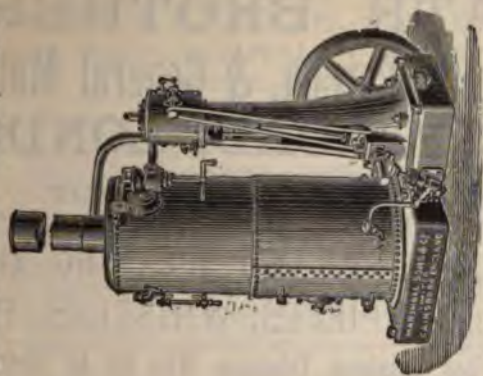
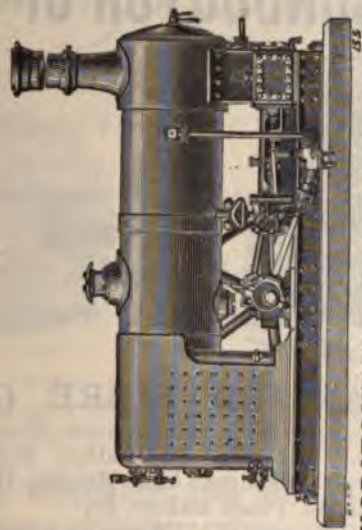


# BRITANNIA IRON WORKS, GAINSBOROUGH.

LONDON OFFICES, SHOW ROOMS, & STORES: MARSHALL'S BUILDINGS, 79, FARRINGTON ROAD, E.C.

TELEPHONE No. 6648.

MANUFACTURERS OF



## PORTABLE, SEMI-PORTABLE, HORIZONTAL, STATIONARY, & COMPOUND ENGINES,

All fitted with PATENT AUTOMATIC EXPANSION VALVE GEAR controlled by the Governors for ensuring perfectly steady running, specially adapting them for driving

## ELECTRIC LIGHT MACHINERY.

Also VERTICAL ENGINES, with or without Boilers, with very sensitive quick speed Governors.  
GOLD MEDAL, Crystal Palace Electric Light Exhibition, 1882.

Over 11,000 Engines Made and Supplied.  
New Industrial Catalogue, with current prices, free on application.



**SHEATH BROTHERS,**  
India Rubber, Gutta Percha, & General Manufacturers  
**89, CITY ROAD, LONDON.**

MANUFACTURERS OF  
MOHAIR AND SILK BRAIDED TUBING FOR THE GOWE  
BELL TELEPHONE, AND SPEAKING TUBES.

TURNERS OF MOUTHPIECES, WHISTLES, PUSHES, &  
Ebonite Sheets, and Rod, Insulated Telegraph Wire for all Electrical Purposes.

THE  
**NEW NON-CONDUCTOR OF ELECTRICITY**



WAREHOUSE.



FACTORY.

**VULCANISED FIBRE (Patented).**

This new Material is supplied in two qualities, Flexible and Hard.

The FLEXIBLE is a substitute for Leather, Rubber, Guttapercha, &c., and is extensively used by Brass Founders, Axle Makers, Hydraulic, Sanitary, and other Engineers, Carriage Builders, Pump Makers, &c.

It makes the best Hot and Cold Water Packings, and for Axle Washers of all kinds it is unequalled.

The Hard is a substitute for Metals, Hard Wood, Ivory, Vulcanite, Ebony, &c., is a good insulator, and is also used for journal bearings, and bushes, condenser ferrules, railway fish bolt washers, &c.

Sold in Sheets, 5ft. 6in. by 3ft. 6in., varying in thickness from  $\frac{1}{8}$ in. to 1in.

FLEXIBLE, 2s. per lb.; HARD, 2s. 3d. per lb.

SOLE AGENTS:—

**MOSSES & MITCHELL, 68, 69, 70 and 71, CHISWELL STREET, LONDON, E.C.**

**GEORGE BEECH,**  
Telegraph Instrument Case Manufacturer.  
BY STEAM POWER,

For all the principal Railways in the United Kingdom, and on the Continent.

*Railway and Telegraph Engineers supplied with Every Description of Telegraph Instrument Cases, Single Needles, Block Instruments, Telephones, Switches, &c.*

*The Material and Workmanship of the First Quality Guaranteed.*

ESTABLISHED 1872.

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Messrs. DAY, DAVIES & HUNT transact all business connected with the obtainment of British, Colonial, and Foreign Patents, and the Registration of Designs and Trade Marks, at most moderate charges. Provisional and Complete Specifications, drawn or revised. Finished Drawings made from Sketches or from Machinery by competent draughtsmen. Oppositions to Patents and Disclaimers conducted or defended. Disclaimers and Memoranda of Alterations prepared and filed. The Prolongation or Confirmation of Patents solicited. The Registration of Trade Marks and of Designs effected. Information and ADVICE on all points connected with Patents, Designs, or Trade Marks. SEARCHES made as to existing or expired Patents, &c., and the Novelty of Inventions, Designs, and Trade Marks ascertained and advised on. Questions of Infringement investigated and OPINIONS written. CASES prepared for Counsel, and opinions obtained. Agreements, Licences, Deeds of Assignment, and all Legal Documents connected with Patents, prepared by a Solicitor, who has had many years' experience in the Law and Practice relating to Letters Patent for Inventions, and in legal proceedings relating to infringements of Patents, &c. Messrs. DAY, DAVIES & HUNT make no charge for preliminary information as to proceedings, expenses, &c.; and all letters of general inquiry, enclosing a stamped and addressed envelope, will be promptly answered gratis. Agents in all Colonies and Foreign Countries.

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**ELECTRICAL ENGINEERS & CONTRACTORS.**

**IRON, ZINC, COPPER AND BRASS WORKERS.**

WHOLESALE & EXPORT MAKERS OF

**METALLIC BASE ELECTRIC BELLS, INDICATORS and SIGNALLING APPARATUS.**

Batteries, Electro-Motors, Dynamo Machines for lighting and plating, Arc Lamps, Reflectors, Ornamental Wrought Lamp Arms.

Sole Licencees and Manufacturers of BRAILSFORD'S PATENT INDICATOR and BELL. By this system Houses, Hotels, Yachts, Ships, Mines, &c., can be fitted with Electric Bells and Signals at half the usual cost.

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**PRIZE MEDAL INTERNATIONAL EXHIBITION, C.P., 1881-2.**

CATALOGUES ON

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M. & T. being practical Engineers of many years experience, Inventors can rely upon having their designs worked out in a thoroughly efficient and practical manner.

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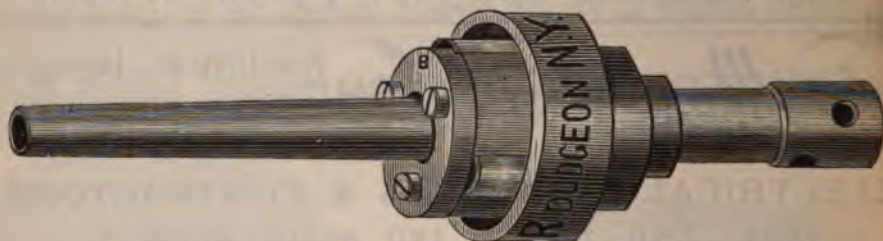
# **RICHARD DUDGEON,**

**114, FENCHURCH STREET, LONDON, E.C.,**

AND

**24, COLUMBIA STREET, NEW YORK.**

INVENTOR, PATENTEE, & SOLE MAKER OF THE  
**HYDRAULIC JACK, HYDRAULIC PUNCH,  
ROLLER TUBE EXPANDERS, &c.**



## **THE TUBE EXPANDER.**



Frequent complaints having been made of the inferiority of the Tools supplied lately under cover of **LISTS** and **ADVERTISEMENTS** headed "**DUDGEON'S ROLLER TUBE EXPANDERS**" **R. DUDGEON** begs to make known that having now retired to America, he cannot guarantee any Expanders unless made by himself at his New York Factory, all of which (and those only) are stamped as under:—



**R. DUDGEON, N. Y.**

**PATD. FEB. 5TH. 1867.**

On the Guide Ring of each Tool.

**WITHOUT WHICH NONE ARE GENUINE.**

These can be always obtained at **R. Dudgeon's English Depot, 114, Fenchurch Street.** If more convenient to get them through Merchants care should be taken to specify "*Dudgeon's own make*" on the Order, but as **R. Dudgeon** observes with regret that imitations bearing his stamp counterfeited are being sold as his, he would respectfully recommend both Merchants and Users requiring Expanders of his make to apply direct, in urging this he merely seeks to secure the identity of what is made by himself, by which he is content to stand or fall.

**R. DUDGEON** takes this opportunity of returning thanks for past favors, either by orders or recommendation, and it being his intention strictly to maintain the Quality and Workmanship so essential for such a Tool as the Expander, begs to solicit a continuance of the same.

*Catalogues and Price Lists on application to*

**R. DUDGEON, 114, FENCHURCH STREET, LONDON, E.C.**



**LAING, WHARTON & DOWN,**

**8 & 9, HOLBORN VIADUCT,**

**LONDON, E.C.,**

are prepared to give Estimates for all kinds of  
**ELECTRIC INSTALLATIONS & FITTINGS,**

Including all descriptions of

**ELECTROLIERS, BRACKETS, PENDANTS, &c., &c.,**

entirely Novel and Unique Design, and to arrange Contracts for any  
*SYSTEM of LIGHTING, and every kind of ELECTRIC WORK.*

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And as they are Agents in LONDON for the

**SWAN**

**LIMITED ELECTRIC LIGHT COMPANY, LIMITED,**

The well-known **INCANDESCENT LAMPS**

this Company can be supplied by them in any number, either for  
**Home Use or for Export.**

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where a **COMPLETE INSTALLATION** may be seen in operation at any time of the day.

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ST. PAUL'S BUILDINGS,  
28, 29 & 30, PATERNOSTER ROW, LONDON, E.C.

*Works: LAMBETH, S.E. Branches: PLYMOUTH & NEW YORK*

We are now carrying out Instructions in the following Branches of our Business

## PRACTICAL DESIGNS AND WORKING DRAWINGS

Prepared, embodying the principles of any invention so that all parts are so arranged as to admit of manufacture in a rapid and inexpensive manner.

This is of considerable importance to the successful introduction of an invention, as, of course it is encumbered by unnecessary material and labour the better.

## MANUFACTURE & SUPPLY.

We are in a position to give estimates for every description of work connected with Electrical Construction and Maintenance, and any other information relating to the same that may be required also to construct or to supervise the construction of, or examine and report upon, any requisite mechanical material or article.

We supply Dynamos, Motors, Batteries, Switches, Wire, Brackets, Meters, Carbons, Jars, Pots, Glass Ware, Insulating Materials and every other description of Electrical Plant or requirements.

## SPECIAL FITTINGS & WORK

Carried out at lowest rates, also Dynamos and Shafting erected, Circuits run and permanent temporary lighting on either Arc or Incandescent system undertaken.

## —INTRODUCTION OF INVENTIONS.

For which we have great facilities, we undertake by arrangement, and our clients may be assured their interests are well served as we have special opportunities of pushing inventions and bringing under the notice of Companies, Firms, &c., to whom they are intended to be of service.

Being always thoroughly informed of the most recent improvements, we have advantage in advising upon inventions, and we supply the most recently improved and useful articles in the market.

To this branch, which is under energetic management, we direct special attention, and find that Companies, Firms, &c., can always obtain information on, and be supplied with, the latest and improved Fittings. We have now in hand a variety of new Inventions, amongst which we can confidently recommend Cable Couplings, Switches, Meters, &c., &c., and an improved Engine Governor which will maintain speed constant notwithstanding excessive changes in load and steam pressure.

## —DISPOSAL OF PLANT.—

We have found it necessary to establish a branch for the disposal of all classes of Electrical Plant or Fittings, new or second-hand, as much Plant—from removed or temporary installations—now idle and useless from its obscurity, but which has now been disposed of at slightly reduced prices. We hope that we may, therefore, continue to be of service to Electric Light Companies, and others, to dispose of Plant that has been previously employed, or otherwise, and enable others by the purchase or employment of the same, to carry out lighting, &c., at a reduced first cost.



# LATHES & LATHE TOOLS

ESPECIALLY ADAPTED FOR

## Electrical Engineers



COMBINATION RULE,  
Spirit Level, Square, Plumb and  
Bevel.



FREDERICK ORME & CO



BEST WARRANTED

SHAW'S BAR AND ROD IRON  
CROPPERS.



For Iron Gas  
Tubes or for  
Bolts, made  
either solid or  
adjustable  
dies.

PATENT NOISELESS FANS,  
For  
Blowing, Ventilating,  
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PATENT ROD IRON CROPPERS.



The largest and best assorted Stock  
in London.

BENCH & PILLAR  
DRILLING MACHINES,



IN GREAT  
VARIETY.



Manufacturers  
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LABOUR-  
SAVING  
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FREDERICK  
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# ITALIAN ASBESTOS

## IMPORTANT IMPROVEMENTS.

THE UNITED ASBESTOS COMPANY (LIMITED), have pleasure in announcing further great improvements in the manufacture of Italian Asbestos for Steam and Water Joints of all kinds. The following improvements to this Company's **NEW PATENT ITALIAN ASBESTOS WOVEN PACKING** for the Glands of Engines employed in working Dynamos:—

"THE STANDARD IRONWORKS,  
COLCHESTER, 10th Sept., 1895

THE UNITED ASBESTOS COMPANY (LIMITED).

DEAR SIR,

After having used your Asbestos Packing for a considerable time, we are satisfied and pleased with the results. It is a decided advance in this direction.

Yours faithfully, DAVEY, PAXMAN & CO

**ITALIAN ASBESTOS ROLLED CLOTH PACKING**, for low pressure Engines and Hydraulic work.

**PURE ITALIAN ASBESTOS MILLBOARD** (Extra Quality), Excellent for dry Steam Joints.

**ITALIAN ASBESTOS AND INDIA RUBBER WOVEN SHEETING TAPE AND WASHERS.** Highly Recommended for Joints where there is any lodgment of water.

**PATENT ACID AND FIRE-PROOF ASBESTOS PAINT.** Asbestos being a good Non-conductor, these Paints are excellent for Electrical Purposes. Numerous Testimonials.

**ASBESTOS YARN, FIBRE, CLOTH, GLOVES, BOILER COVERINGS**  
&c., &c.

N.B.—All the above are composed of First-class **Italian** Asbestos, but in order to meet the requirements of Consumers, with whom **Cheapness in First Cost** is an object, **Canadian** Asbestos is now supplied, but not recommended, at Prices one-half to two-thirds those charged for the **Pure Italian** Material.

*Illustrated Catalogue and Samples on application to*

**THE UNITED ASBESTOS COMPANY (LIMITED)**  
161, QUEEN VICTORIA STREET, LONDON, E.C.



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CHARLTON S.E. 14 UNION CH  
OLD BROAD S

**JOHNSON AND PHILLIPS**  
MANUFACTURERS OF  
**CABLES & CARBONIC**

EVERY DESCRIPTION OF LEADING W...  
INSULATED WITH RUBBER, G.F. &c. &c. COVERED  
TAPE, COTTON, SILK, ETC. ETC. ETC. ETC.

Manufacturers of Telegraph Appliances, and Materials for making and laying Submarine Cables, and Contractors for Underground and Aerial Telegraphs.

## IRON & STEEL TELEGRAPH BUOYS OF ALL KINDS.

Channels, both Patent & Ordinary; Centipedes, Creepers, Mushrooms, Cable Tanks, Picking-up and Paying-out Machinery, Dynamometers, Bow and Stern Gear, Steam and Hand Hauling Gears, Rope and Fittings, Special Wire Sounding Machines for Shallow and Deep Water, Cable Drums, Splicing and Jointing Tools, &c., &c.

MACHINERY DESIGNED & CONSTRUCTED FOR THE COMPLETE EQUIPMENT OF TELEGRAPH CABLE FACTORIES AND VESSELS.

Apparatus and Material used in the Construction, Maintenance and Working of

### LAND LINES, viz.:-

- Poles — { Wrought Iron and Composite Poles of various kinds, for Telegraph, Telephone, and Electric Lighting.
- Insulators — { *Johnson & Phillips'* Patent Fluid Insulators, *Lewis's* Patent Clip Insulators, and all kinds of the ordinary form; Shackles, Galvanized Iron Shackle Straps, &c.
- Wire — { Galvanized Iron and Steel Telegraph Wire, Iron and Steel Ropes, Stay Rods, &c.
- Batteries — { Sole Makers of *Higgins'* Patent Bichromate Batteries, and Contractors for the supply of all the ordinary forms. Manufacturers of Zinc and Carbon Battery Plates of special quality, Porous Cells, Stoneware and Glass Jars.

MAKERS OF SPECIAL UNDERGROUND TORPEDO AND FIELD CABLES.  
WITH SINGLE OR MULTIPLE CORES.

### SOLE MAKERS OF HIGGINS' CASCADE BATTERY.

Insulated Copper Wires, Strand and Ropes, Taped or Braided, Cotton or Silk Covered, and Electric Light Cables.

ELECTRIC LIGHT: MAKERS OF ELECTRIC ARC LAMPS, SWITCHES, KEYS, &c.

ESTIMATES GIVEN FOR COMPLETE SYSTEMS OF ELECTRIC LIGHTING.

## INSULATORS.

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Crystal Porcelain Pottery Company  
LIMITED.



TRADE MARK.

MANUFACTURERS OF  
INSULATORS, SHACKLES, ELEMENTS,  
CELLS FOR BATTERIES, ETC.  
*Telegraphic and Electrical Works*

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THE NEW PORCELAIN TILES.  
VITREOUS, IMPERVIOUS, IMPERMEABLE  
INSULATING SLABS.

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Proprietors of the Registered Insulating Accumulator Resistor

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SPECIMENS ON VIEW:—

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Works:—COBRIDGE, STOKE-ON-TRENT



## CHARLES J. SIMMONS,

(Sixteen Years with Messrs. ELLIOTT BROS.)

MANUFACTURER OF ELECTRICAL TEST INSTRUMENTS FOR LAND AND MARINE SERVICE.

CONTRACTOR TO H.M. POSTMASTER-GENERAL, H.M. SECRETARY OF STATE FOR INDIA,  
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ALVANOMETERS, RESISTANCE COILS, ELECTROMETERS, CONDENSERS, KEYS, SWITCHES, &c.

SIMMONS & PHILLIPS' PORTABLE TESTING BOX, specially designed for Electric Light Engineers.

See "Electrical Review," September 9th, 1882.

Mr. J. B. HENCK, Jr.'s PORTABLE BRIDGE & GALVANOMETER, specially designed for use of  
Telephone Companies.

1, LEVERTON STREET, LEIGHTON ROAD, LONDON, N.W.

A. Standards with value and co-efficients carefully determined. Resistance Coils for large currents.  
Special Measuring Instruments for Electric Light Companies.

## SHIPPY BROTHERS,

ELECTRICAL ENGINEERS & LIGHT CONTRACTORS,

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Works:—34, CHARLES STREET, HATTON GARDEN, E.C.

Sole Manufacturers of

### THE UNIVERSAL INCANDESCENT GLOW LAMP,

The most Economical and Brilliant Lamp.

PRICE LISTS ON APPLICATION.

The Cafe Monico, Regent Circus, is lighted throughout by the Universal Lamp.

ESTIMATES GIVEN AND CONTRACTS CARRIED OUT FOR  
ARC AND INCANDESCENT SYSTEMS OF ELECTRIC LIGHTING,  
SUITABLE FOR  
MARINE, MINING, STREET, FACTORY AND DOMESTIC LIGHTING.

Sole Agents for the Universal Dynamo Machines, Woodward's Thermo-Electric Generators, the  
Universal D.P. Storage Batteries, Shippey's Continuous Current Primary Batteries, Blake's Patent  
Dinitia Battery Boxes and Accumulator Cells, Morgan's Patent Safety Miners' Lamps, The  
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Masters at Sea, Rolland's "Star Brand" Magnets, Greenwood's Silicite Compound Insulation for  
Underground Leads, &c.

## THE ELECTRIC AND MAGNETIC APPLIANCE STORES.

Manufacturing and Consulting Electricians and Telegraph Contractors,

OFFICE: 21, LIVERPOOL STREET, CITY.

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Wholesale and Retail Electrical Apparatus of every description both English and Foreign.

Special Department for all Domestic and Household Appliances.

Electric Bells, Burglar & Fire Alarms, Indicators fitted to Prisons, Hotels, Houses, &c.  
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Only Experienced Workmen are employed and Sent to All Parts of the United Kingdom.

WHOLESALE & RETAIL LISTS, Post Free.

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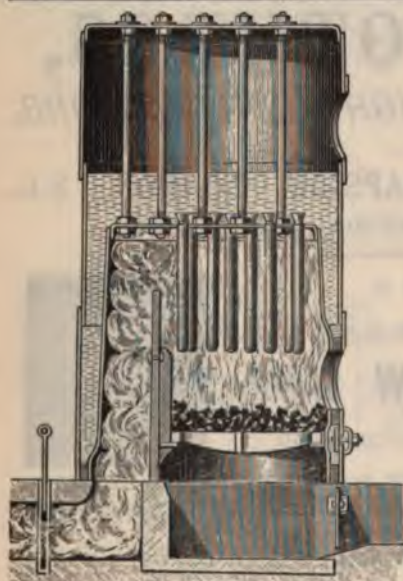
## ELECTRIC & PNEUMATIC BELLS, INDICATORS,



And all kinds of FITTINGS requisite for DOMESTIC BELL WORK.

ELECTRICAL APPARATUS OF ALL KINDS.  
SPECIALITIES IN WINDOW & DOOR CONTACTS.  
PRICE LIST ON APPLICATION.

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Downdraught Type of "Field" Patent Boiler.

Two of these Boilers have been working continuously at Messrs. SALES, POLLARD, LLOYD & Co., in the Farringdon Road for over 10 years, and on a recent independent test were found to be evaporating 10·83 lbs. of water per lb. of coal.

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Consulting & Mechanical Engineer  
27, LEADENHALL ST., LONDON  
Works: MANCHESTER

**SOLE MAKERS** of the "FIELD" BOILERS, which occupy but very little space, an evaporating efficiency of 10·93 lbs. of water of coal, after working ten years, and without anything for repairs.

**COMPOUND ENGINES**, specially designed for driving Dynamos, using only 24 lbs. of coal. Indicated HP per hour, automatically governed, having but one slide valve on the high pressure cylinder. Absolute steadiness of driving guaranteed.

**"TOWER" SPHERICAL ENGINE** 30 HP and weighing only 90 lbs.

**Sole Makers of BLAKE'S LATEST IMPROVED PATENT SECTIONAL STONE CRUSHERS.**

**PATENT FRICTION CLUTCHES.**

Taps, Valves & Fittings of every description.

# A. MARTIN, IVORY AND WOOD TURNER, 54, PERCIVAL STREET, CLERKENWELL,

MANUFACTURER OF  
ELECTRIC BELL PUSHES AND SPEAKING TUBE FITTINGS  
SWITCH BOARDS, COIL REELS, &c.

SMALL TURNED PARTS of every description in EBONITE, IVORY, BONE, HORN and BRASS FOR TELEGRAPH, TELEPHONE AND ELECTRIC LIGHT ENGINEERS.

A large assortment of Electric Bell Pushes, fitted with Springs and Platinum Contacts, kept in Stock.

Special Attention given to Drawings and New Designs.



## NORTH EASTERN ELECTRIC WORKS.

**ARRISON, COX-WALKER & CO.,**  
MANUFACTURING ELECTRICIANS,  
GRAPH, TELEPHONE AND PNEUMATIC ENGINEERS,  
15, Blackwellgate, DARLINGTON, England.  
Factory:—2½, HIGH ROW.

for Vyle's Patent easily-tested Lightning Conductors. Manufacturers of all  
Telephonic Apparatus and Call Bells, Mining Signal Bells, Watchman's  
Tell-tales, Electro-Motors, and General Electric Work.

SOLE AGENTS FOR SCOTLAND.

## THE NEW MATERIAL

neers (Sanitary and Hydraulic), Electricians, Axle Makers, Brassfounders, Pump Makers,  
companies, Carriage and Waggon Builders, &c. Substitute for Leather, Rubber and Gutta Percha.

*is unequalled for Washers of all kinds, Hot and Cold Water Packings,  
and Plumbers' uses generally, Insulators, &c.*

## THE PATENT VULCANISED FIBRE

in Sheets from 1-32nd to 1-in. in thickness, and in Two qualities—Flexible, 2s. per lb.  
Hard, 2s. 3d. per lb.

## LINEN BELTING

commended for Electrical purposes for steadiness in working. Is much cheaper and more  
an Cotton, and not affected by damp. Will not slip on the Pulleys, and can be made any  
length without joints.

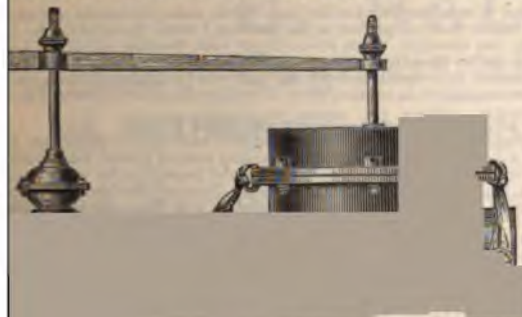
Price List on Application.

## BINNEY & SON,

62, QUEEN VICTORIA STREET, LONDON, E.C.

e Street, City Road, London, E.C. | 50, West Howard Street, Glasgow.  
lington Street, Leeds. | 63, Broad Street, Birmingham.

## OSCILLATION OF GAS CAUSED BY GAS-ENGINES COMPLETELY CURED BY BEECHEY'S PATENT ANTI-FLUCTUATOR.



*Testimonial from  
Messrs. CROSSLEY BROS., LIMITED,  
Manufacturers of the "Otto"  
Gas Engine.*

Manchester, May 7, 1883.

C. G. BEECHEY, Esq.

"Dear Sir,—We have tested your  
Anti-Fluctuator with our 'Otto' Gas  
Engines, and find its action to be quite  
satisfactory. We shall have pleasure  
in recommending its adoption to our  
clients.—Yours faithfully,

CROSSLEY BROS., LIMITED,  
W. J. CROSSLEY, Director."

manufacturers:—W. PARKINSON & CO.,  
OTTAGE LANE WORKS, CITY ROAD, LONDON.



## BELL'S ASBESTOS.



FIG. 5.

BELL'S PATENT ASBESTOS BLOCK PACKING,  
For High Pressure Engines.

This Packing has been specially designed to overcome the difficulties experienced by Engineers and others in the practical working of Engines of the most modern types of construction.

The greatly increased skill and workmanship now obtained in the construction of Engines and Boilers have led to a rapid increase in the working pressure, the object being the attainment of a high rate of speed combined with economical working, the practical advantage of which, however, cannot be realized unless the packings are so constructed as to avoid stoppages for the purpose of repacking the stuffing boxes.

It is now a recognised fact that the most perfect heat resisting material suitable for the purpose of a packing is Asbestos, but to ensure a successful application of this fibre great skill is required in its selection and manufacture.

In this packing the Asbestos is woven into a stout cloth and owing to the peculiar way in which it is manipulated, great elasticity is imparted to the Packing. So successfully has this been done, that with light screwing it has been found in practice that little or no lubricant is required to insure a minimum amount of friction and to keep the rods from over heating. An improved vacuum is always maintained by the use of this packing, which meets with unqualified approval wherever it is applied.

The Patent Block Packing is square, as Fig. 1, Figs. 2 and 3 represent the Round Block Packing with solid and hollow cores, and Fig. 4 without Rubber Core but with Rubber Inlaid.

As these Packings are extensively imitated, and as it is a common practice among dealers and agents to supply the cheaper manufacturers at my list prices, users are requested to see that the Packing supplied to them bears my trade mark.

**Bell's Asbestos Boiler and Pipe Covering Composition**, for coating every class of Steam Pipes and Boilers. Noncombustible and easily applied when steam is up, adheres to metals and preserves them from rust, prevents the unequal expansion and contraction of Boilers exposed to weather, covers 50% more surface than any other coating and is absolutely indestructible. It can be stripped off after many years use, mixed up again with 20% of fresh and applied again. The Composition is supplied dry and is only to be mixed with water to the consistency required for use.

A Horizontal Boiler, 17-ft. 6-in. long, 15 H.P., gave the following results:

|                       |      |
|-----------------------|------|
| Temperature on Plates | 180° |
| " " Covering          | 94°  |

One ton of Coal was saved per week and although the fire was raked out every evening, 20 lbs. of Steam were found in the Boiler next morning.

**Bell's Asbestos and India Rubber Woven Tape and Sheeting**, for making every class of Steam and Water joints. It can be bent by hand to the form required without puckering and is specially useful in making joints of manhole and mudhole doors on Boilers; also for large "Still" joints, where boiling Fat and Steam have to be resisted. It is kept in stock in rolls of 100 feet, from 1/4 inch to 3 inches wide, and any thickness from 1/16 inch upwards. Manhole Covers may be lifted many times before renewal of the jointing material is necessary.

The same material is made up into Sheets about 40 inches square, and each Sheet bears my trade mark, without which none is genuine.

THE FOLLOWING TESTIMONIAL REFERS TO THIS MATERIAL.

Mr. JOHN BELL, 118, Southwark Street, S.E.

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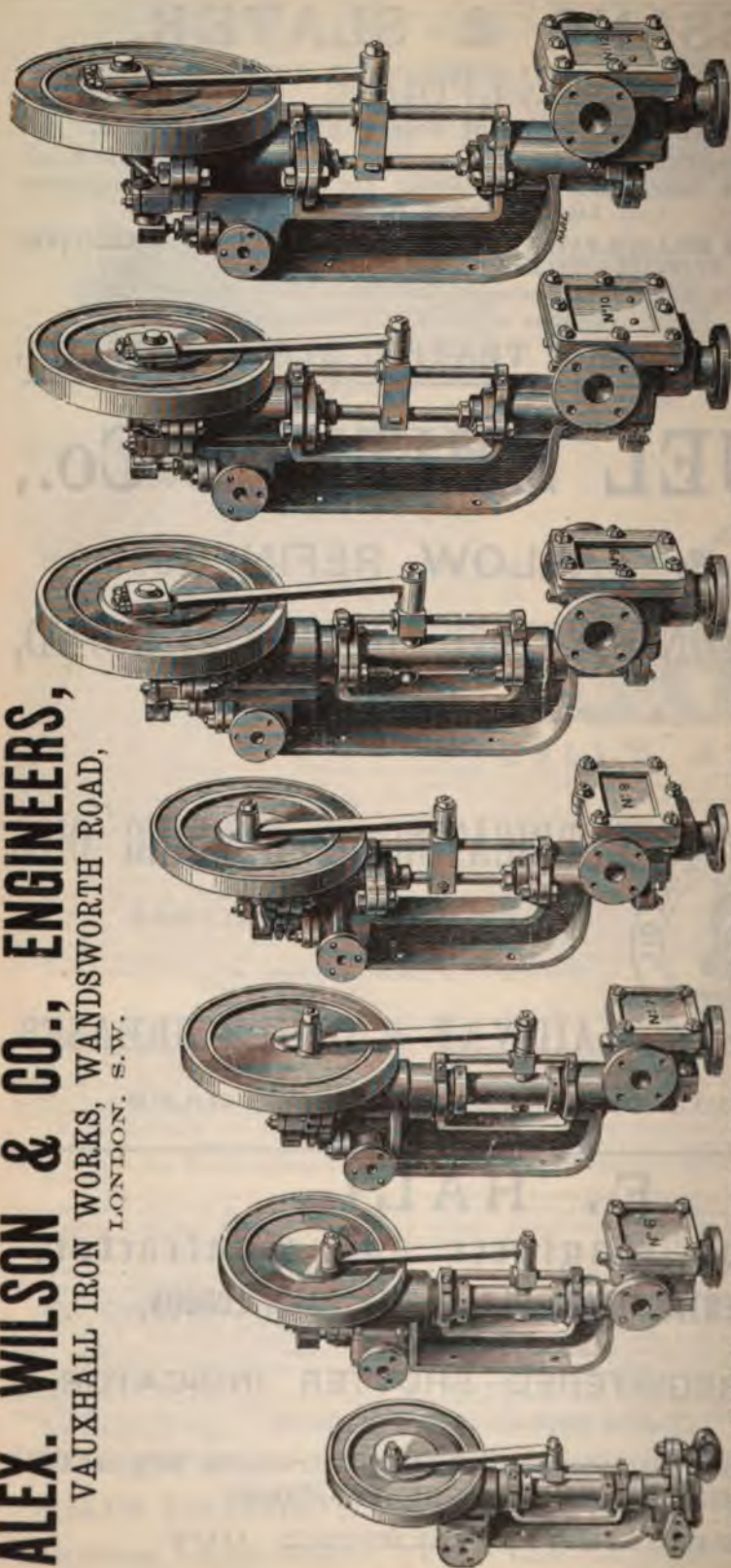
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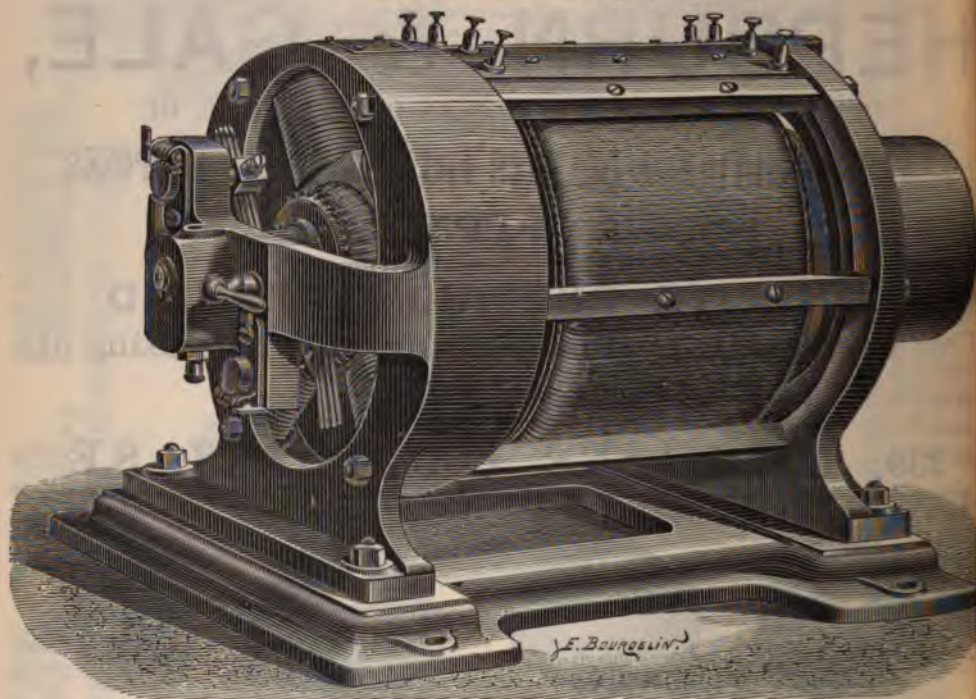


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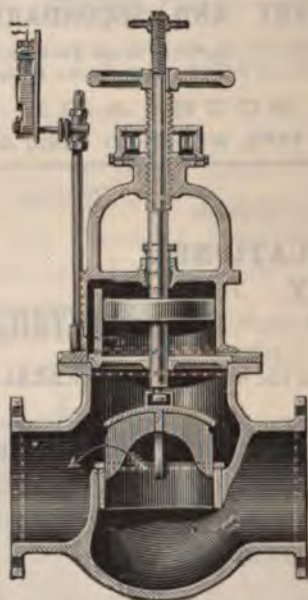
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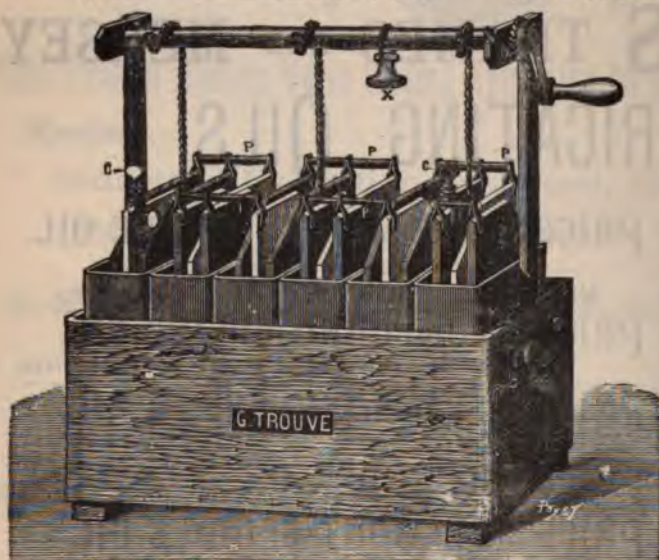
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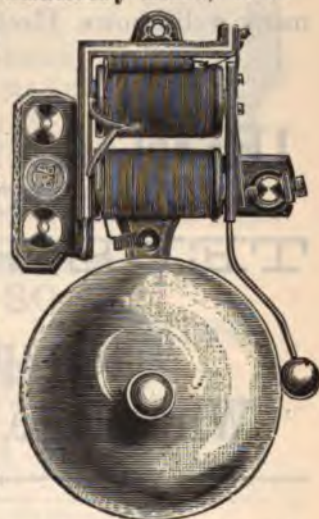
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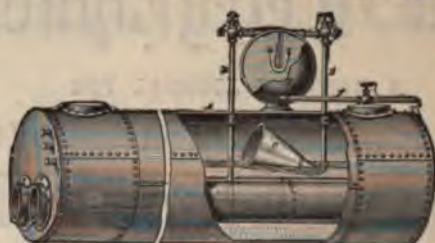
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**1883-84.**

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# PREFACE.

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presenting the American section to the subscribers and purchasers of

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY & ADVERTISER, FOR 1883-84,

ask lenient judgment for any errors of omission or commission that may have crept into this comprehensive and extensive work. We claim the right to the word "UNIVERSAL," covering, as it does, the whole electrical professions, trades and interests, except some embryo undertakings which have not advanced far enough at this writing for entry here, or culminated to a point where confidence may be freely given. Their place will be found in sufficiently developed next year's Edition, which will be a necessity, by the continued growth of solid Electric business throughout the world. The apathy of strictly professional electricians in aiding such a work as this to perfect completeness by giving names and necessary information, we may say, has been triumphed over in this American section, for which we thank one and all.

Electricians, as well as contingent Electrical trades and professions, will find in this Directory a bulletin of the world's Electrical business that can be found no where else in one volume: Therefore, it offers the greatest advantage to business men and professional electricians, in point of great economy, as a permanent authority always at hand, as well as containing general information from the advertisements.

CUMMING & BRINKERHOFF,

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J. A. BERLY,  
London.

## INTRODUCTORY, EDITORIAL & REMARKS ON THE PAST YEAR IN AMERICA.

---

THE success of the 1882-83 Edition, assures us that our efforts for this present issue 1883-84 will be thoroughly appreciated. Our aim has been to present a more complete, enlarged, and correct list of manufacturers and dealers in electrical and contingent trades in the United States of America, than ever offered in any Directory. We have in furthering this end spared no expense in collecting our information from every available source.

To those who are as yet in ignorance of the object of this compilation, we would say that it is intended as a medium of communication between the Scientific and Manufacturing World, opening up the field of trade to the Inventor, and supplying business houses with lists of professional and experimental electricians, which they could not otherwise obtain, except at great labour and expense.

A glance at the index to American trades will prove that, instead of the possibility of the present work being limited, it has been a question of very careful judgment, just where the compiler should draw the line; for besides those having *direct* interest in electrical matters, like Telegraph, Telephone and Electric Light Companies, supply agents, manufacturers and dealers, there is a large class of merchants and professionals, such as brass and copper manufacturers, chemists, designers, electrotypers, engine makers, engineers, glass manufacturers, underground tube makers, metal dealers, opticians, patent solicitors, engravers, platers, railroad superintendents and purchasing agents, publishers, rubber, screw, steel, iron, wire and zinc manufacturers, &c., who have a very large interest in the success of electrical process, and who can scarcely be classed therefore as "indirect," inasmuch as ELECTRICITY in its multifarious branches, depends so largely on these corollary trades and professions. We have added a number of new tables, &c., which have been compiled with great care, in the full knowledge of their importance, and that they will prove valuable to both the professional and business community.

There appears to be, at first sight, a large amount of space devoted to the Metropolis in proportion to the whole country; but, when we consider that New York City and suburbs, with the neighbouring Cities of Brooklyn, Jersey City, Newark, &c., represents over 2,000,000 population, and also that every large manufactory, railroad, steamship line, mine, &c., in the United States and Canada, has representatives in New York, either by agent or regular branch house, we see that New York City may be said to be an epitome of the Electric trade of the country. But, of course, this does not take anything from the local interests of any one city or section, and they are each rapidly growing productive in every department of Electricity.

The changes in the Telephone and Electric Light Departments are noted elsewhere. The tendency being greatly to consolidate the numerous local companies under one general management, and the manufacture of instruments and apparatus, to a few agencies.

Electric Lighting has made rapid strides over the entire Continent, many small towns using it in preference to establishing gas manufactories, as will be seen by examination of the long list of Brush agencies which we publish. But in such a great project as the lighting the East River Suspension Bridge, we hail the onward move over former unsurmountable difficulties fully understood by electricians, as a new triumph for the United States Electric Lighting Company.

A general committee, of all the principal Companies interested, has been formed to inquire into the feasibility of establishing underground systems in all the principal cities. The Edison Companies being the only ones, so far, who have uniformly laid their wires in tubes placed underground.

The past year has seen the extension of the Mexican, Central and South American lines and cables, so that increased facilities are being offered to parties desiring to reach by telegraph the interior of Mexico, Central America, United States of Columbia, Venezuela, Peru, Chili, Bolivia, Brazil, &c.

The centennial of Bolivia was celebrated at Carracas, Venezuela, by the opening of a new railway from the seaport La Guira to the capital, and the inauguration of an International Exposition, at which many of our electric interests found a representation.

In the United States, the regular Exhibitions at the American Institute, New York and Cincinnati, O., Exposition, continue to show the newest developments in Electric Machinery.

At the Chicago Railway Exposition, the Experimental Electric Railway drew large crowds of interested spectators and won high encomiums.

The success of the Atlanta, Ga., Cotton Exposition, led the Louisville, Ky., citizens to inaugurate a similar one on a larger scale, which was formally opened by President Arthur in August. Next year will witness the opening of the Exhibition at New Orleans, in the heart of the cotton and sugar growing States.

At all these Exhibitions, which aim towards the International, much interest has been centered on the Electric Light, Telephone, Telegraph and other similar products of Electric invention.

Among the books of the year, probably the most important addition ever made to technical literature, is the fourth or supplementary volume of KNIGHT'S NEW MECHANICAL DICTIONARY. A description of tools, instruments, machines, processes and engineering, with profuse indexical references to technical journals (1876-1880), by EDWARD H. KNIGHT, A.M., LL.D., published by Houghton, Mifflin & Company, Boston, Mass.

In a work of such magnitude, comprising four thousand pages of concisely written descriptions, profusely illustrated with engravings, a very large part of the book (especially the last volume just completed) is necessarily devoted to electricity and its kindred appliances. A glance through this recent volume shows over 600 titles on electrical subjects, 100 of which are descriptions of various forms of batteries. The indexes are a stupendous work in themselves, for by their aid the reader can with little trouble obtain a general knowledge on any given subject. Those under "Electric Light" cover four and a-half columns solid nonpareil type.

Dr. Knight did not live to see the completion of this, his life's greatest work, but he left his unpublished manuscript ready for the printer's hand, having finished it just before his death.

In 1884, the Franklin Institute of Philadelphia, will hold an International Exposition of Electricity, similar to those held in Paris, London, Munich and Vienna, in 1881-2-3. We bespeak for the Franklin Institute a hearty support in their enterprise. A Society, so long and favourably known as an institution founded for the purpose of furthering the interests of inventors and manufacturers, is peculiarly well fitted to undertake the first American Electric Exposition, and push it to an ultimate success; the full draft of their circular will be found annexed.

In the Telegraphic world, the greatest event of the year was the strike of the Telegraphers, which occurred on July 19th, and lasted 30 days. It is not our province to enter into the *pro* and *con* of the controversy, further than to note that the blow was aimed principally by the employees against the Western Union Telegraph Company, as representing the largest and most powerful organization. The first result was shown in the determination of the Companies to resist the demands rather than yield to what they considered unjust. At the termination of the strike of the operators the Western Union Company voluntarily lessened the hours of service and increased the rate per hour for night work.

Other results of the strike were the consolidation of the smaller Companies against their great rival; great talk in the press of the prospect of a Governmental Telegraph, being agitated on the next United States Congress; and the formation of a large number of new Telegraph Companies, one of the most prominent being the New Cable Company, under the auspices of James Gordon Bennett, of the *New York Herald*, and John W. Mackay, of San Francisco, Cal., the President of the Postal Telegraph Company. The International interests of Cable Telegraphy have united in the persons of these two progressive gentlemen, the public welfare of the East and West, and in fact the whole country, from whom they have the sincere wishes for the perfect success of their project, which should culminate about June, 1884. The Cables being now under construction by Messrs. Siemens Brothers, of London.\*

CUMMING & BRINKERHOFF,

*Publishers' Agents and Compilers of the American Section,*

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\* We regret to record the sudden death of Sir WILLIAM SIEMENS.



## DESCRIPTIVE TABLE OF METALS.

PILED FROM VARIOUS SOURCES BY GEORGE CUMMING.

|                                                                                                                                                                                                            | Price per<br>Avoirdupois<br>pound. | Specific<br>gravity. | Chemical<br>symbol. | Equivalent. | Fusing<br>point<br>Fahr. | Conductivity<br>electric. | Conductivity<br>caloric. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------------|-------------|--------------------------|---------------------------|--------------------------|
| —A white metal, discovered in 1830 by Sefström ...                                                                                                                                                         | \$10,000 00                        | —                    | V                   | 68°50       | —                        | —                         | —                        |
| —An alkaline metal, so called from exhibiting dark<br>s in the spectrum analysis, discovered in 1860 by<br>and Kirchhoff ... ..                                                                            | 9,070 00                           | —                    | Rb                  | 85°36       | —                        | —                         | —                        |
| —A metal obtained from the minerals zircon and<br>h, in the form of a black powder ... ..                                                                                                                  | 7,200 00                           | —                    | Zr                  | 22°40       | —                        | —                         | —                        |
| An alkaline metal; the lightest metal known,<br>at ductile and malleable ... ..                                                                                                                            | 7,000 00                           | 5·336                | L                   | 7°00        | 356                      | —                         | —                        |
| —A metal in the form of a grayish-black powder ...                                                                                                                                                         | 5,400 00                           | 2·1                  | Gf                  | 4°70        | 1,800                    | —                         | —                        |
| —The metallic base of lime, discovered in 1808 by<br>mphey Davy ... ..                                                                                                                                     | 4,500 00                           | 1·57                 | Ca                  | 28°00       | —                        | —                         | —                        |
| —A malleable metal of a yellowish color, harder<br>ad, discovered in 1793 by Hope and Klaproth ...                                                                                                         | 4,200 00                           | 2·54                 | Sr                  | 43°80       | —                        | —                         | —                        |
| —Obtained from the mineral gadolinite, found in<br>l ... ..                                                                                                                                                | 4,080 00                           | —                    | Tb                  | —           | —                        | —                         | —                        |
| —Discovered in 1828, is of a grayish-black color, and<br>re perfectly metallic ... ..                                                                                                                      | 4,080 00                           | —                    | Y                   | —           | —                        | —                         | —                        |
| A metal found associated with yttrium ... ..                                                                                                                                                               | 3,400 00                           | —                    | E                   | 112°6       | —                        | —                         | —                        |
| A metal of high specific gravity, a grayish-white<br>and a lamellar texture ... ..                                                                                                                         | 3,400 00                           | —                    | Ce                  | 46°00       | —                        | —                         | —                        |
| —A metal found associated with cerium and<br>um, discovered in 1842 by Mosander ... ..                                                                                                                     | 3,200 00                           | —                    | D                   | 48°00       | —                        | —                         | —                        |
| —Of a gray color, very hard and brittle; extracted<br>se ores of platinum, discovered in 1843 by Claus ...                                                                                                 | 2,400 00                           | 11·3                 | Ru                  | 52°11       | —                        | —                         | —                        |
| —Of a white color and metallic lustre, and extremely<br>ad brittle. It requires the strongest heat that can<br>luced by a wind furnace for its fusion, discovered in<br>Wollaston ... ..                   | 2,300 00                           | 12·1                 | Ro                  | 53°20       | —                        | —                         | —                        |
| —Previously named columbium, first discovered in<br>found at New London, Conn. ... ..                                                                                                                      | 2,300 00                           | —                    | Nb                  | 48°80       | —                        | —                         | —                        |
| The yellow metallic base of baryta ... ..                                                                                                                                                                  | 1,800 00                           | —                    | Ba                  | 68°50       | —                        | —                         | —                        |
| —A metal discovered in 1803, and found in very<br>rains, of a steel-gray color and fibrous structure ...                                                                                                   | 1,400 00                           | 11·8                 | Pd                  | 55°20       | —                        | —                         | —                        |
| —A brittle, gray-colored metal, found with platinum<br>Found native as an alloy with osmium in lead-gray<br>and is the heaviest of known substances ... ..                                                 | 1,300 00*                          | 10·                  | Os                  | 59°40       | —                        | —                         | —                        |
| —Discovered in 1789, is of a reddish-brown color,<br>metallic lustre, and is commonly obtained in a<br>ine form ... ..                                                                                     | 1,000 00                           | 21·15                | Ir                  | 98°60       | —                        | —                         | —                        |
| —A metal of a deep blue color, discovered in 1791,<br>wall, England ... ..                                                                                                                                 | 900 00                             | 18·4                 | U                   | 60°00       | —                        | —                         | —                        |
| —A hard, brittle metal of a grayish-white color,<br>silt of fusion, discovered in 1797 by Vanquelin ...                                                                                                    | 689 00                             | —                    | Ti                  | 25°00       | —                        | —                         | —                        |
| —A reddish-yellow color and metallic lustre; one of<br>viest of metals, and not being subject to oxidation<br>r change from exposure to the atmosphere, is well<br>be used as coin ( <i>Aurum</i> ) ... .. | 500 00                             | 5·5                  | Cr                  | 26°30       | —                        | —                         | —                        |
| —It is obtained only in small, separate globules,<br>ackish, brilliant mass; these are brittle and ex-<br>infusible ... ..                                                                                 | 330 00                             | 10·34                | Au                  | 196°44      | 2,016                    | 77·0                      | 53·2                     |
| —A metal closely resembling lead in general ap-<br>e, being of nearly the same color, density and<br>... ..                                                                                                | 225 00                             | 8·62                 | M                   | 48°00       | —                        | —                         | —                        |
| ... ..                                                                                                                                                                                                     | 225 00                             | —                    | Tl                  | —           | —                        | 9·16                      | —                        |

\* Osmium vaporizes at 220°.

## DESCRIPTIVE TABLE OF METALS—continued.

|                                                                                                                                                                                                | Price per<br>Avoirdupois<br>pound. | Specific<br>gravity. | Chemical<br>symbol. | Equivalent. | Fusing<br>point<br>Fahr. | Conductivity<br>electric. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------------|-------------|--------------------------|---------------------------|
| <i>Platinum</i> —A metal of the colour of silver, but less bright; it is harder than iron, very ductile, and capable of being rolled into thin plates; it is one of the heaviest of metals     | 150 00                             | 21·                  | Pt                  | 98·60       | 4,591°                   | 18·09                     |
| <i>Manganese</i> —A metal of a dusky white, or whitish-gray color, very hard and difficult to fuse                                                                                             | 130 00                             | 8·                   | Mn                  | 27·48       | —                        | —                         |
| <i>Tungsten</i> —A metal of a grayish-white color and considerable lustre, discovered in 1781; it is brittle, nearly as hard as steel, and is fused with extreme difficulty ( <i>Wolfram</i> ) | 115 00                             | —                    | W                   | 92·00       | —                        | —                         |
| <i>Magnesium</i> —The metallic base of magnesia                                                                                                                                                | 64 00                              | 1·7                  | Mg                  | 12·00       | —                        | —                         |
| <i>Potassium</i> —A bluish-white, lustrous metal; it has an atomic weight of 39, and is lighter than water ( <i>Kalium</i> )                                                                   | 64 00                              | 0·85                 | K                   | 39·00       | 136°                     | —                         |
| <i>Silver</i> —A soft, white, metallic element, very malleable and ductile ( <i>Argentum</i> )                                                                                                 | 20 00                              | 10·5                 | Ag                  | 108·00      | 1,873°                   | 108·57                    |
| <i>Aluminium</i> —Discovered in 1828 by Wohler, the metallic base of clay; it is white, but with a bluish tinge, and is remarkable for its lightness, tensile strength and conductivity        | 16 00                              | 2·5                  | Al                  | 13·70       | 2,253°                   | 33·76                     |
| <i>Cobalt</i> —A metal of reddish-gray color, brittle and difficult of fusion **                                                                                                               | 16 00                              | 8·5                  | Co                  | 29·50       | —                        | 17·22                     |
| <i>Sodium</i> —A yellowish-white metallic element, soft like wax, and lighter than water ( <i>Natrium</i> )                                                                                    | 8 00                               | 0·972                | Na                  | 23·00       | 207°                     | —                         |
| <i>Nickel</i> —A grayish-white metal of considerable lustre †                                                                                                                                  | 5 00                               | 8·8                  | Ni                  | 29·50       | —                        | 13·11                     |
| <i>Cadmium</i> —A white metal related to zinc, and both ductile and malleable ‡                                                                                                                | 4 00                               | 8·6                  | Cd                  | 56·00       | 442°                     | 23·72                     |
| <i>Bismuth</i> —A metal of a reddish-white color, somewhat harder than lead, and rather brittle                                                                                                | 2 50                               | 9·8                  | Bi                  | 210·30      | 512°                     | 1·25                      |
| <i>Mercury</i> —A white metal, liquid at common temperature, and congealing at 40° below zero Fahr. ( <i>Hydrargyrum</i> )                                                                     | 95                                 | 13·5                 | Hg                  | 100·00      | +                        | 1·63                      |
| <i>Arsenic</i> —A metal of a steel-gray color and brilliant lustre, very brittle                                                                                                               | 50                                 | 5·8                  | As                  | 75·00       | *                        | 4·76                      |
| <i>Tin</i> —A white, soft, non-elastic metal ( <i>Stannum</i> )                                                                                                                                | 25                                 | 7·2                  | Sn                  | 56·00       | †420°                    | 13·36                     |
| <i>Copper</i> —A metal of a reddish color, ductile, malleable and tenacious; it is among the most elastic and sonorous of metals ( <i>Cuprum</i> )                                             | 25                                 | 8·9                  | Cu                  | 31·70       | 1,996°                   | 95·0                      |
| <i>Antimony</i> —It is of a tin-white color laminated or crystalline, fusible, and evaporizable at a rather low temperature ( <i>Stibium</i> )                                                 | 16                                 | —                    | Sb                  | 123·00      | 840°                     | 4·62                      |
| <i>Zinc</i> —A metal of a brilliant white color, with a shade of blue; it is not brittle, but less malleable than copper, lead or tin                                                          | 11                                 | 7·                   | Zn                  | 3·250       | 470°                     | 29·02                     |
| <i>Lead</i> —A metal of a dull, white color, with a cast of blue; it is the least elastic and sonorous ( <i>Plumbum</i> )                                                                      | 8                                  | 11·44                | Pb                  | 103·60      | 612°                     | 8·32                      |
| <i>Iron</i> —A metallic element, hard and very malleable when hot; the most easily magnetized of all metals ( <i>Ferrum</i> ) ‡                                                                | 2                                  | 7·8                  | Fe                  | 28·00       | ++                       | 20·73                     |

\* Arsenic volatilizes without fusion at 356°. The arsenic of commerce is arsenious acid ( $\text{AsO}_2$ ).

† Mercury or quicksilver; boils at 682°.

‡ The tin of commerce is iron plated with tin. Pure tin is commonly called "black tin."

§ Steel is iron in which is contained a small portion of carbon.

|| Cadmium vaporized at 600°.

†† Nickel is strongly magnetic, but loses this property when heated to 660°.

\*\* Cobalt, in its pure state, is of no commercial value, but it attains considerable importance in compounds.

++ Cast iron fuses at 2,786°; wrought iron, 3,250°.

## BELGIAN ANTI-FRICTION METAL is composed of

|          |     |     |     |     |     |      |
|----------|-----|-----|-----|-----|-----|------|
| Copper   | ... | ... | ... | ... | ... | 20.  |
| Tin      | ... | ... | ... | ... | ... | 4.   |
| Antimony | ... | ... | ... | ... | ... | 0.5  |
| Lead     | ... | ... | ... | ... | ... | 0.25 |

24.75

Mix all the other ingredients before adding the copper.

*Doubledays* consist of cast iron, copper, glass, antimony, tin, spelter and lead. U.S. Patent 178,841.

*Coline (French)*, asbestos and graphite equal parts, mix and reduce to a paste by adding silicate of soda or pressed to shape or turned when solid, steep in melted paraffine, wax or mineral oil. See U.S. Patents 189,684, 157,509, 154,317, 136,163, 234,482, 175,841, 217,946 and 163,154.

AMERICAN RAILROAD & TELEGRAPH TIME STANDARD.

into effect from noon, Sunday Nov. 18, 1883, in place of the various standards

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1884

JANUARY

The use of "Mean Local Time" has been almost entirely abolished. But, as a matter of interest, the relations of certain local times, as previously used, to STANDARD TIME, is temporarily shown in the columns on the right and left.

Atlanta, Ga., 11 22 A.M.  
Augusta, Ga., 11 32 A.M.  
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Boston, Mass., 12 16 P.M.  
Buffalo, N.Y., 11 44 A.M.  
Charleston, S.C., 11 40 A.M.  
Charlottetown, 12 50 P.M.  
Chicago, Ill., 11 09 A.M.  
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Galveston, Tex., 12 41 A.M.  
Harrisburg, Pa., 12 46 P.M.  
Hamilton, Ont., 12 41 A.M.  
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Hayward, Cal., 12 30 A.M.  
Houston, Tex., 12 30 A.M.  
Indianapolis, Ind., 11 26 A.M.  
Jefferson City, Mo., 12 31 A.M.  
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Kansas City, Mo., 12 41 A.M.  
Knoxville, Tenn., 11 34 A.M.  
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Lincoln, Neb., 12 31 A.M.  
Little Rock, Ark., 12 31 A.M.  
London, Eng., 8 00 P.M.  
Macon, Ga., 11 25 A.M.  
Memphis, Tenn., 11 00 A.M.  
Mexico, 12 02 A.M.  
Milwaukee, Wis., 11 08 A.M.  
Minneapolis, 12 47 A.M.  
Mobile, Ala., 12 01 A.M.

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CENTRAL TIME

NAVIGATORS TIME

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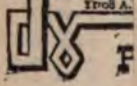
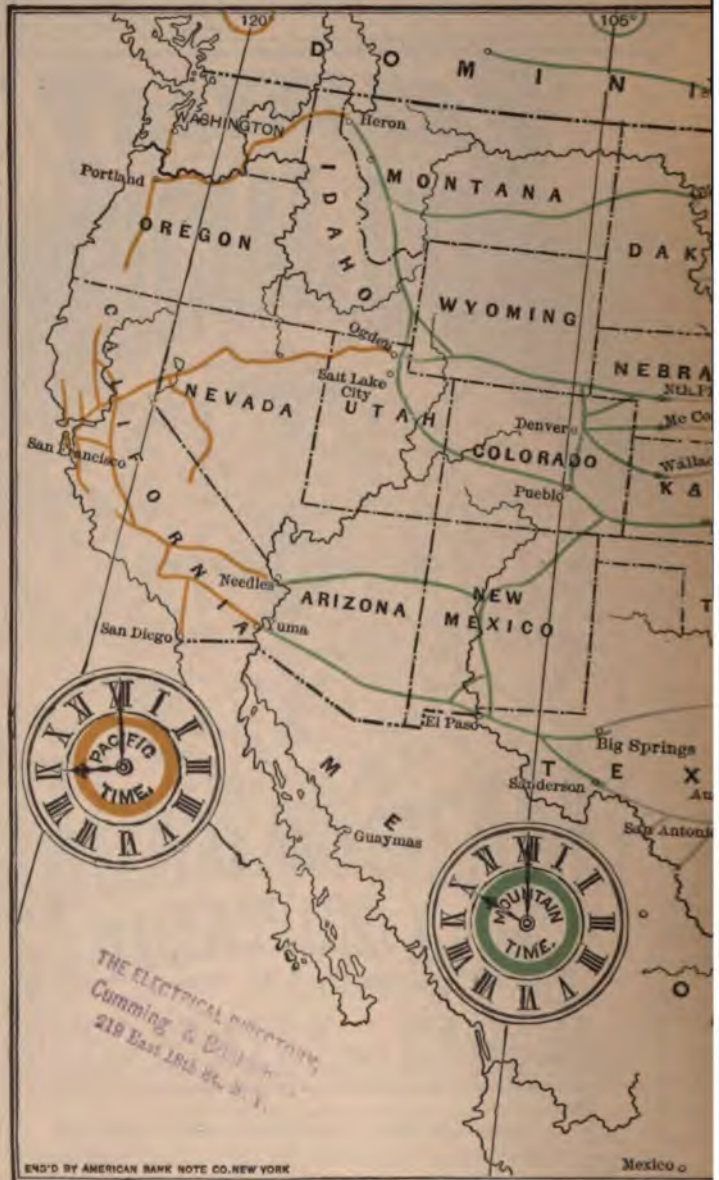
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Hannibal, Mo. 10 34 A.  
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Milwaukee, Wis. 11 08 A.  
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*into effect from noon, Sunday Nov. 18, 1883, in place of the various standards*



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# AMERICAN RAILROAD & TELEGRAPH TIME STANDARD.

*Put into effect from noon, Sunday Nov. 18, 1883, in place of the various standards heretofore in use. See pages 562 and 563 (1883 Edition).*

The new time system North America is divided theoretically into five sections running north and south, each division being fifteen degrees of longitude in breadth. The time for all places in each division will be that of its central meridian. In Eastern Canada the standard will be known as "intercolonial time," which will coincide with the local time on the 60th meridian (four hours) west of Greenwich. In the United States, Alaska, Ontario, Manitoba and British Columbia, the standards will be known as the "Eastern," "Central," "Mountain," and "Pacific," times, corresponding respectively to the times on the 75th, the 90th, the 105th, and the 120th meridians west of Greenwich, five, ten and eight hours slower than the English standard. Each of these meridians being one hour from the time for each division they enclose will be also one hour slower than that of the adjacent division to the eastward and one hour faster than that of the next division to the westward. In crossing a division, therefore, travellers will not have to alter the minute hand of their watches, but can tell the local time by mentally adding an hour to the face time of the watch when crossing any one of the meridians going east or subtracting an hour when crossing one of them going west. The advantages of the new system to the railroads and the travelling public are manifest. Instead of, as heretofore, fifty or more local time standards for the government of our vast interstate and continental traffic, the number of standards is reduced to five, and the latter are, moreover, capable of intercomparison, which cannot be said of the several dozen of local standards hitherto in use. Meridians from which time is reckoned are equidistant and the sun passes from one to another in one hour, no standard clock can differ from any clock showing local time at any point more than two meridians by more than thirty minutes. The new system can therefore occasion no great permanent inconvenience in any locality where the standard time is known or is obtainable. As New York City is so near the 75th meridian, and its local time is only about four minutes faster than the standard, the transition will take place in the metropolis almost without exciting general notice. Intercolonial Section will comprise all that part of the continent lying between a line which passes through the City of Fredrickton, N.B., and the Atlantic Ocean. The Eastern section will comprise the United States from Maine to Florida, also the Lower Lakes. The Central section will comprise the Mississippi and Missouri Valleys the Upper Lakes and Texas. The Mountain region will comprise the Rocky Mountains, and the Pacific section will take in what is popularly called the Alaska Pacific slope, as British Columbia.

divisions may be understood by a little study of the following diagram :—

| Pacific.   | Mountain.  | Central.    | Eastern.         | Intercolonial. |
|------------|------------|-------------|------------------|----------------|
| 21         |            | 14          | 4<br>5 6<br>10 7 | 3 1<br>2       |
|            | 19<br>18   | 15 17<br>11 | 8                |                |
| 20         |            | 13<br>16 12 | 9                |                |
| 8 o'clock. | 9 o'clock. | 10 o'clock. | 11 o'clock.      | 12 o'clock.    |

figures within the divisions denote the approximate geographical position of the various cities therein thereby.

1, Johns, N.F.; 2, St. John, N.B.; 3, Halifax, N.S.; 4, Quebec; 5, Toronto; 6, Boston; 7, New York; 8, Washington; 9, Charleston; 10, Buffalo; 11, Cincinnati; 12, New Orleans; 13, St. Louis; 14, Paul; 15, Kansas City; 16, Galveston; 17, Chicago; 18, Denver; 19, Salt Lake City; 20, San Francisco; 21, Victoria.

At 11 it is noon at 4, 5, 6, 7, 8, 9 and 10, representing New York, Boston, Washington, Charleston, New Orleans, Quebec and Toronto, it will be one hour after noon, or 1 o'clock, at 1, 2 and 3, representing the City of Johns and Halifax. At the same time it will be one hour before noon (11 o'clock) in the valley denoted by the figures 12, 13, 14, 15, 16 and 17, representing New Orleans, St. Louis, St. Paul, St. City, Galveston and Chicago. Within all the space comprised by the mountain region, indicated by 18 and 19—Denver and Salt Lake City, it will be two hours before noon of the Atlantic region—or 10 o'clock, while in the Pacific region, 20 and 21, representing San Francisco and Victoria, it will be three hours before noon by the Atlantic time, or 9 o'clock. As a general rule, no local time will be more than thirty minutes.

Comparison of the tables which we print in this (1884) edition in place of those on pages 562 and 563 of the American section of the 1883 edition, will show the difference between local or "sun" time and "standard" time at various points in the United States and Canada. It has been found impossible to embrace the whole country in strict lines of demarcation shown by the maps, viz.: at 67½, 82½, 97½ and 112½, inasmuch as many railroads run through two sections, and some through three; hence an arbitrary selection of the different times has been adopted by certain railroads. For instance, the Lake Shore railroad uses Central time throughout its whole length from Buffalo to Chicago, crossing the theoretical line at a point half way between Cleveland and Toledo, Ohio; all the roads east of Pittsburgh, Pa., run by Eastern time, all west by Central time, and all roads in Georgia by Central time, although both Ohio and Georgia are half and half in the Eastern and Central sections. The five times correspond as near as possible with the local time of Sydney, C.B. (Intercolonial), Philadelphia, Pa. (Eastern), St. Louis, Mo. (Central), Denver, Col. (Mountain), and Carson City, Nev. (Pacific).

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| Loring's Handbook of the Telegraph, morocco, 1.00; cloth, 75; (boards) ... ..                | ...        |
| Maxwell's Electricity and Magnetism, 2 vols. (cloth) ... ..                                  | 35 00 2 50 |
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Any of the above books, or of any other work relating to the Science of Electricity will be forwarded to any address in the United States, Canada, Newfoundland, Mexico, or any foreign in the Universal Postal Union, postage prepaid, on receipt of the price.

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## TABLE OF C.G.S., AND ENGLISH UNITS.

BY BRADLEY A. FISKE, U.S.N. 59, ASTOR HOUSE, NEW YORK.

1 grain = 15.432 grains.  
 1 dyne = 981 dynes.  
 1 dyne = 445,900 dynes (approximate).  
 1 dyne = .00000224 + lbs. (approximate).  
 1 dyne = .0648 grammes.  
 1 dyne = 39.37 inches.  
 1 dyne = 1093.6 yards.  
 1 dyne-centimetre.  
 1 dyne = 13,586,850 ergs of work = 13 + ergs.  
 1 dyne = .1385 kilogrammètres.  
 1 dyne = 98.1 meg. ergs.  
 1 dyne = 7.220 foot pounds.  
 1 dyne = 10<sup>8</sup> c.g.s. units.  
 1 dyne = 10<sup>9</sup> ergs.  
 1 dyne = 10<sup>-1</sup> c.g.s. units.  
 1 dyne = 10<sup>-1</sup> c.g.s. units.  
 1 dyne = 10<sup>-9</sup> ergs.  
 1 dyne = 42 × 10<sup>8</sup> ergs = 1 gramme water C.

1 Eng. heat unit = 772 foot pounds = 1 lb. water 1° F.  
 1 Horse-power = 550 foot pounds per second.  
 1 Horse-power = 33,000 foot pounds per minute.  
 1 Horse-power = 1,980,000 foot pounds per hour.  
 1 Horse-power = 76 kilogrammètres per second English measure.  
 1 Horse-power = 75 kilogrammètres per second, French measure.  
 1 Horse-power = 7,460 meg. ergs per second, English measure.  
 1 Horse-power = 7,357.5 meg. ergs per second, French measure.  
 Unit of electrical work = volt-coulomb or vomb (suggested).  
 1 Vomb = .737 foot pounds.  
 1 Meg. vomb = 737,000 foot pounds.  
 Unit electrical energy = volt-ampère, or watt.  
 1 Watt = 10 meg. ergs per second =  $\frac{1}{748}$  kilogrammètres per second =  $\frac{1}{748}$  horse-power.

The Franklin Institute of the State of Pennsylvania  
FOR THE  
Promotion of the Mechanic Arts.

INTERNATIONAL ELECTRICAL EXHIBITION IN PHILADELPHIA

To Open Tuesday, September 2nd, 1884.

THE attention of all persons interested in the generation and application of electricity is respectfully invited to the exhibition of electricity and electrical appliances to be held in Philadelphia, United States of America, commencing on Tuesday, September 2nd, 1884, and under the auspices of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts.

From the eminent reputation of this institution, coupled with the fact that the proposed exhibition will be the first in America exclusively devoted to this important and progressive branch of science, the above announcement has attracted unusual interest throughout the United States, and the exhibition will undoubtedly afford an admirable opportunity of witnessing a representative display of American discovery and invention in electricity.

To increase its scientific and industrial importance, as well as to add to its attractiveness, it was determined shortly after its inception to give it an international character. The importance of the project having been properly represented to the Congress of the United States, an act was passed which, having received the signature of the President of the United States, is now the law.

This official recognition provides for the admission into the United States, duty free, of all articles for exhibition only. The text of this act of Congress is as follows:

"WHEREAS, the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts proposes to hold an exhibition of electrical apparatus, machinery, tools and implements, and other articles used in scientific and mechanical and manufacturing business and investigations; and

"WHEREAS, it is deemed desirable to promote the success of such an exhibition by reasonable encouragement, in order that it may be made useful for the promotion of knowledge, therefore, be it

"Resolved, by the Senate and House of Representatives of the United States of America, Congress assembled, That all articles that shall be imported for the sole purpose of exhibiting at the exhibition to be held by the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts, in the city of Philadelphia, in the years 1883 or 1884, shall be admitted without payment of duty or customs fees or charges, under such regulations as the Secretary of the Treasury shall prescribe; provided, that all such articles as shall be sold in the United States, or withdrawn for consumption therein at any time after such importation shall be subject to the duties, if any, imposed on like articles by the revenue laws in force at the date of importation; and provided, further, that in case any article imported under the provisions of this joint resolution shall be withdrawn for consumption, or shall be sold with payment of duty as required by law, all the penalties prescribed by the revenue laws shall be applied and enforced against such articles, and against the persons who may be guilty of such withdrawals or sales."

It remains only to add, at the present time, that no effort will be spared by the Franklin Institute to secure a large and important representation of the progress of foreign countries and that the most liberal provisions will be made to place European and American exhibitors on a fair and equal footing.

The subject of electricity and its applications is at present attracting an unusual amount of attention, and the exhibition side by side of the best achievements of Europe and America cannot fail to be in the highest degree instructive.

All information required by exhibitors, including the classification of exhibits, regulations for the entry of articles for competition, advices as to the best modes of transportation, customs regulations, and all other needful information, will be furnished to parties making application for space for exhibition.

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Those desiring to subscribe for the specifications and drawings in any of the sub-classes can do so by depositing an amount sufficient to cover the estimated cost for any period of time, whereupon the copies will be forwarded as paid issue.

**SPECIFICATIONS OF PATENTS ISSUED SINCE MAY 30, 1865, COMMENCING WITH NO. 47,911 HAVE BEEN PRINTED UP TO THIS DATE;** also the classes of Electricity, Fishing and Trapping, and the sub-classes of Cartridges, Hand Blows Machine Guns, Magazine Guns, Revolvers, Self-Binders, and Time Locks, previously patented.

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# UNITED STATES ELECTRICAL PATENT STATISTICS.

PREPARED FROM THE OFFICIAL RECORDS BY GEORGE CUMMING.

The first three United States electrical patents were granted to D. Harrington, for therapeutics, electrodes, and body wear, and were not numbered. They bear date July 22nd, 1833; January 27th, 1834; and March 31st, 1835. The first numbered electrical patent, 132, follows February 25th, 1837, granted to T. Davenport for motors. S. F. B. Morse's first patent, 1647, for telegraphs, was the ninth electrical patent, bearing date, June 20th, 1840. It will be a surprise to many to learn that the Wheatstone-Cooke patent, 1622, for telegraphs, ante-dates Morse's just ten days. The ball once started rolling, and assumed magnificent proportions until now, after fifty years, electricity is looked upon as the most important branch of the United States patent office, being divided into seventy sub-classes, embracing the electric light, telegraphs, telephones, alarms, clocks, conductors, batteries, gas lighting, telegraph rods, insulators, meters, motors, signals, underground lines, etc. The number of patents to date (December, 1883) being over 5,000. It is interesting to note how few first inventors there are who share the credit with the general public for their originality. This is owing no doubt in part to the time being ripe for certain inventions, in part to the fact that later adapters are inclined to be more anxious in asserting themselves, and also largely to the fact that whoever puts in the "missing link" is the one who gets the credit for complete invention. We see this most clearly in the case of the electric light, duplex and quadruplex telegraphy, and in special instruments like repeaters, relays, keys, and transmitters, &c. The first inventor being rarely if ever known to the public, the first electric light patents were granted to Collier and Baker for arc (20,255), May 18th, 1858; to Gardiner and Blossom (20,706), June 29th, 1858, for incandescent; and to D'Ivernois (114,652), May 9th, 1871, for systems, &c. The following list shows the dates, numbers, and names of the first patents for a few of the special instruments, applications, and devices:—

|                      |       |         |                      |       |                   |
|----------------------|-------|---------|----------------------|-------|-------------------|
| Magneto Electric     | .. .. | 8,843   | Gonnenburg & Richten | .. .. | May 30th, 1852.   |
| Motors               | .. .. | 125,586 | G. Little            | .. .. | April 9th, 1872.  |
| Telephonic Calls     | .. .. | 199,007 | T. A. Watson         | .. .. | Jan. 8th, 1878.   |
| Details              | .. .. | 217,661 | L. A. Watson         | .. .. | July 15th, 1879.  |
| Electric Telephones  | .. .. | 199,141 | E. Berliner          | .. .. | Jan. 15th, 1878.  |
| Mechanical           | .. .. | 205,864 | J. R. Holcombe       | .. .. | July 9th, 1828.   |
| Magnetic             | .. .. | 174,465 | A. G. Bell           | .. .. | Mar. 7th, 1876.   |
| Telephonic Systems   | .. .. | 40,346  | J. Lewis             | .. .. | Oct. 20th, 1863.  |
| Automatic Telegraphs | .. .. | 5,957   | A. Bain              | .. .. | Dec. 5th, 1848.   |
| Dial                 | .. .. | 6,040   | L. G. Curtis         | .. .. | Jan. 16th, 1849.  |
| Duplex               | .. .. | 21,329  | M. G. Farmer         | .. .. | Ang. 31st, 1858.  |
| Dynamo               | .. .. | 223,845 | S. D. Field          | .. .. | Jan. 27th, 1880.  |
| Multiplex            | .. .. | 136,369 | M. Gally             | .. .. | Mar. 4th, 1873.   |
| Perforating          | .. .. | 18,149  | J. P. Humaston       | .. .. | Sep. 8th, 1857.   |
| Printing             | .. .. | 4,464   | R. E. House          | .. .. | April 18th, 1846. |
| Quadruplex           | .. .. | 170,963 | J. Olinsted          | .. .. | Dec. 14th, 1875.  |
| Telegraph Relays     | .. .. | 20,930  | E. F. Barnes         | .. .. | July 20th, 1858.  |
| Repeaters            | .. .. | 7,769   | C. G. Bulkley        | .. .. | Nov. 12th, 1850.  |
| Electric Clocks      | .. .. | 9,279   | M. G. Farmer         | .. .. | Sep. 21st, 1852.  |
| Thermometers         | .. .. | 37,875  | A. Ross              | .. .. | Mar. 10th, 1863.  |
| Batteries            | .. .. | 2,621   | P. Coad              | .. .. | Mar. 28th, 1812.  |
| Underground Lines    | .. .. | 96,641  | S. F. Van Choat      | .. .. | Nov. 9th, 1869.   |
| Conductors           | .. .. | 3,316   | S. F. B. Morse       | .. .. | Oct. 25th, 1846.  |
| Insulators           | .. .. | 4,807   | R. L'Anglais         | .. .. | Oct. 7th, 1846.   |
| Fire Telegraphs      | .. .. | 4,691   | A. Smith             | .. .. | July 24th, 1846.  |
| Rheostats            | .. .. | 122,267 | G. Little            | .. .. | Dec. 26th, 1871.  |
| Keys                 | .. .. | 35,694  | E. B. & J. G. Lake   | .. .. | June 24th, 1862.  |
| Transmitters         | .. .. | 5,612   | E. R. Roe            | .. .. | May 30th, 1848.   |
| Electrolysis         | .. .. | 4,012   | A. W. Thompson       | .. .. | April 26th, 1845. |
| Induction Coils      | .. .. | 5,507   | B. H. & G. H. Horn   | .. .. | April 11th, 1848. |
| Gas Lighting         | .. .. | 18,945  | S. Gardiner, junr.   | .. .. | Dec. 22nd, 1857.  |

In regard to the number of patents taken out by any individual, T. A. Edison is so far in advance of all others sink in comparative insignificance. Mr. Edison has covered the whole field of electricity, having obtained patents for nearly every form of instrument, system, and appliance worth protection. His first electrical patent (90,649), and probably his first application for electrical honours, was granted for indicators, and bears date of June 1st, 1869. Up to July 1st, 1882, he had received 227 electrical patents, and the number of pending applications would indicate that the rumour to the effect that his great ambition is to obtain 1,000 patents, would seem to bear some evidence on its face.

# ELECTRICAL PATENTS, ISSUED IN THE UNITED STATES, 1882 AND 1883.

A printed copy of the specification and drawing of any patent to the annexed lists, also of any patent issued and will be furnished post paid on receipt of TWENTY-FIVE CENTS, by any of the patent solicitors whose names appear in the Directory; or they may be ordered through the American Agents, Messrs. CUMMING & BEINKERHOFF, 219, East Eighth street, NEW YORK CITY. In ordering please state the number and date of the patent desired.

## 1882—JANUARY 3RD.

- 252,002 Polarization, or Secondary Electric Battery. C. A. Faure, Paris, France.
- 251,867 Electric Block Signal Apparatus. Oscar Garrett, Boston, Mass.
- 251,748 Automatic Regulator for Electric Light Systems. Wm. L. Voelker, Morton, Pa.
- 9,999 Support for Electric Wires and Lamps in Cities. Wm. C. Allison, Philadelphia, Pa.
- 215,970 Coating and Insulating Wire for Electrical Purposes. Jas. Taylor, Ansonia, Ct.
- 251,991 Electric Governor and Indicator for Fluid Pressure Brakes. E. S. Batchelor, Pittsburgh, Pa.
- 251,774 Electric Lamp. St. George Lane Fox, London, England.
- 251,749 Apparatus for Manufacturing Incandescent Lamps and Carbons. Wm. L. Voelker, Morton, Pa.
- 252,004 Automatic Circuit Breaker for Secondary Batteries. Jas. A. Maloney and Frans Burger, Washington, D.C.
- 251,807 Signalling and Circuit-connecting Apparatus. T. A. Watson, Everett, Mass.
- 251,729 Telegraph Cable Terminal. Wm. R. Patterson, Chicago.
- 251,955 Automatic Signaling-Circuit for Telephone Exchanges. Chas. E. Scribner, Chicago, Ill.
- 251,810 Telephone Signal. G. Lee Anders, London, England.
- 251,758 Magneto-Electric Machine for Telephone Signaling. G. Lee Anders, London, England.
- 215,800 Battery Telephone Transmitter. Chas. E. Scribner, Chicago, Ill.
- 251,777 Electric Gas-Lighter. C. D. Haskins, N.Y.

## JANUARY 10TH.

- 252,175 Striking Mechanism for Electric Belts. G. E. Bowers, Fitchburg, Mass.
- 252,095 Burglar Alarm. J. Giles, South Bend, Indiana.
- 252,260 Cut-out for Burglar Alarms. Wm. R. Sawyer, Providence, R.I.
- 252,249 Electric Cable. W. J. Phillips, Philadelphia, Pa.
- 252,178 Electrical Illumination. Chas. E. Buell, New Haven, Ct.
- 252,242 Electrical Signal Transmitter. G. S. Mott, Philadelphia, Pa.
- 252,258 Electrical Signaling Apparatus. C. E. Buell, New Haven, Ct., and J. F. Buell, Woburn, Mass.
- 252,293 Electro Magnetic Brake. L. W. Goss and Hugo Walter, Cincinnati, O.
- 252,261 Insulated Electrical Conductor. W. H. Sawyer, Providence, R.I.
- 252,262 Insulated Electrical Conductor. W. H. Sawyer, Providence, R.I.
- 252,219 Electric Lamp. A. G. Holcomb, Granby, Ct.
- 252,037 Electric Lamp. R. M. Hunter, Philadelphia, Pa.
- 252,135 Electric Lamp. R. R. Moffat and S. Chichester.
- 252,182 Electric Lamp. A. J. B. Cance, Paris, France.
- 252,193 Electrical Railway. E. H. Cowles, Cleveland, O.
- 252,255 Telephone. J. H. Rogers, Washington, D.C.
- 252,294 Telephone. E. T. Greenfield, Brooklyn, N.Y.
- 252,160 Compound Telephone. Thos. A. Watson, Everett, Mass.
- 252,142 Electric Speaking Telephone. A. W. Rose and C. A. Cheever, New York.
- 252,259 Telephone Exchange Circuit. C. W. Ross, Columbus, O.
- 252,257 Telephone Apparatus and Circuit. Jas. H. Rogers, Washington, D.C.
- 252,024 Mechanical Telephone. G. K. Farrington and H. C. Farrington, Kirksville, Mo.
- 252,132 Telephone Transmitter. Jos. Olmsted, N.Y.
- 252,296 Carbon of Telephone-Transmitter. C. E. Scribner and G. D. Clark, Chicago, Ill.
- 252,257 Telephone Apparatus and Circuit. J. H. Rogers, Washington, D.C.
- 252,141 Electric Telephony. A. W. Rose, New York.
- 252,189 Electrical Apparatus for Medical Use. Jno. Butler, New York.

## JANUARY 17TH.

- 252,351 Apparatus for the Preparation of Carbon Conductors. L. K. Bohne, New York.
- 252,381 Process of Manufacturing Carbons. L. H. Latimer, New York.
- 252,347 Circuit-Regulating Device for Electric Lights. C. M. Ball, Troy, New York.
- 252,380 Dynamo Electric Machine. Chas. A. Hussey, New York.
- 252,405 Commutator for Dynamo-Electric Machines. Addison G. Waterhouse, New York.
- 252,400 Automatic Electric Signal Printing Register. Frank B. Wood and Hy. I. Brower, New York.
- 252,353 Automatic Electric Signaling Apparatus. H. J. Brower, Brooklyn, and Fk. B. Wood, New York.
- 252,395 Electrical Switch-board. Jno. B. Odell, Chicago.
- 252,361 Electric Lamp. M. G. Farmer, Newport, R.I.
- 252,391 Electric Lamp. H. S. Maxim, Brooklyn, N.Y.
- 252,392 Electric Lamp. H. S. Maxim, Brooklyn, N.Y.
- 252,396 Electric Lamp. J. Olmsted, New York.
- 252,397 Electric Lamp. J. Olmsted, New York.
- 252,404 Carbon Holder for Electric Lamps. Addison G. Waterhouse, New York.
- 252,387 Electric Signal for Railways. Hippolyte Leblanc and Eugene V. A. Loiseau, Paris, France.
- 252,545 Electric Railway Signal. Chas. D. Tisdale, Boston, Mass.
- 252,497 Telegraphic Sounder. G. S. Mott, Philadelphia, Pa.
- 252,498 Telegraphic Sounder. G. S. Mott, Philadelphia, Pa.
- 252,442 Telephone. T. A. Edison, Menlo Park, N.J.
- 252,521 Electric Telephone. Jas. H. Rogers, Washington, D.C.
- 252,421 Switch for Telephone Exchanges. H. W. Breckenbridge, Providence, R.I.
- 252,576 Multiple Switch Board, for Telephone Exchanges. Leroy B. Firman, Chicago, Ill.
- 252,322 Electric Call, for Telephone and other purposes. Wm. C. Lockwood, Brooklyn.
- 252,511 Anti-Induction Cable. W. B. Patterson, Chicago, Ill.



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## JANUARY 24TH.

- Electric Cable. R. S. Waring, Pittsburgh, Pa.
- Electric Lighting Apparatus. M. G. Farmer, Newport, R.I.
- Electric Lighting System. M. G. Farmer, Newport, R.I.
- Short Circuiting Switch, for Dynamo-Electric Machines. Wm. Hockhausen, New York.
- Magneto-Electric Machine. Wm. Hockhausen, New York.
- Polarity Protector, for Dynamo-Electric Machines. Wm. Hockhausen, New York.
- Electro Signaling Apparatus. H. Pickford and H. S. Gregory, Chelsea, Mass.
- Automatic Fire Alarm. Isidor Kitse, Cincinnati, Ohio.
- Electrical Gas Burner. J. Redding, Malden, N.Y.
- Electric Gas Lighting. J. Redding, Malden, N.Y.
- Insulator for Telegraph Wires. C. L. Gore, New York.
- Electric Lamp. H. S. Maxim, Brooklyn, N.Y.
- Vulcanizing India Rubber and Gutta Percha Coverings and Coatings of Telegraphic Cables. H.A. Clark, Boston, Mass.
- Automatic Time Recorder, for Telegraph Signal Boxes. H. W. Pope, Elizabeth, N.J.
- Compound Telephone. Geo. Lee Anders, London, England.
- Transmitter for Telephones. S. H. Bartlett and H. E. Waite.
- Voltaic Battery. A. F. W. Partz, Philadelphia, Pa.

## JANUARY 31ST.

- Burglar Alarm. S. D. Lake, Jersey City, N.J.
- Electric Lighting Apparatus. J. B. Fuller, New York.
- Electric Lamp. J. B. Fuller, New York.
- Apparatus for Immersing Galvanic Battery Plates. A. J. Holt, Grand Rapids, Mich.
- Electric Lamp. H. B. Sheridan, Cleveland, Ohio.
- Electric Apparatus for Working Railway Brakes. F. A. Achard, Paris, France.
- Duplex Telegraph. C. L. Buckingham, Elizabeth, N.J.
- Duplex Telegraph. H. Van Hovenbergh, Elizabeth, N.J.
- Secret Message Telegraph. A. F. Johnson and F. B. Johnson, New York.
- Instrument for Preparing and Transmitting Secret Telegraph Messages. A. F. and F. B. Johnson, New York.
- Quadruplex Telegraph. S. D. Field, New York.
- Secret Printing Telegraph. A. F. Johnson and F. B. Johnson, Brooklyn, N.Y.
- Secret Printing Telegraph. A. F. Johnson and F. B. Johnson, Brooklyn, N.Y.
- District Telegraph System. C. F. McCulloch, Baltimore, Md.
- Electrical Visual Indicator. C. H. Pond, New York.
- Self-Adjusting Relay for Printing Telegraph. S. M. Plush and W. P. Phelps, Philadelphia, Pa.
- Apparatus for Preparing and Transmitting Secret Telegraph Messages, A. F. and F. B. Johnson, Brooklyn, N.Y.
- Telephone Exchange Apparatus. G. Lee Anders, London, England.
- Insulator and Protector for Underground Lines. W. A. French, Camden, N.J.
- Laying Subterranean Conductors. Hy. E. Loane, Baltimore, Md.
- Electric Wire Fence. J. H. Connelly, Pittsburgh, Pa.
- Combined Electric Lamp and Generator. Eliz. Morey, New York.

## FEBRUARY 7TH.

- Electric Machine, Dynamo. Chas. A. Hussey, New York.
- Electric Store Boxes and Lights, Regulator for. H. B. Sheridan, Cleveland, Ohio.
- Insulation of Electrical Conductors. H. C. Strong, Chicago.
- Interlocking Switch and Signal Mechanism. E. H. Johnson, Philadelphia, Pa.
- Lamp, Electric. A. G. Holcomb, Danielsonville, Ct.
- Lamp, Electric. W. M. Thomas, Cincinnati, Ohio.
- Lamp, Electric. A. G. Waterhouse, New York, N.Y.
- Lamp, Electric. A. G. Waterhouse, New York, N.Y.
- Lamps, Carbon-holder for Electric. John Tregoning, New York, N.Y.
- Magneto-Electric Machine. L. Hernan, Union, N.J.
- Railway Trains, Electric Apparatus for Producing Signals and Lights upon. E. T. Starr, Philadelphia, Pa.
- Telegraph Apparatus, Duplex (re-issued). Jos. B. Stearns, Boston, Mass.
- Telegraph Apparatus, Duplex (re-issued). Jos. B. Stearns, Boston, Mass.
- Telegraph Apparatus, Duplex (re-issued). Jos. B. Stearns, Boston, Mass.
- Telegraph Table, Revolving. J. L. Garber, Greenville, Ohio.
- Telegraphs, Electric Coupling for Train. E. D. Parker, Salina, Kansas.
- Telephone Exchange System and Apparatus. G. B. Scott, Brooklyn, N.Y.

## FEBRUARY 14TH.

- Candle for Electric Lighting. Jean Baptiste Java Mignon, Paris, France.
- Clock, Secondary Electric. D. F. Sweet, Hastings, Mich.
- Electric Light. A. L. Airey, Cleveland, Ohio.
- Electric Lights, etc. Apparatus for Elevating Poles for. J. D. A. Mensing, Rochester, N.Y.
- Electric Lighting Apparatus. M. G. Farmer, Newport, R.I.
- Electrical Conducting Wires with Metallic Armor, Machine for Covering. W. Halkyard, Providence, R.I.
- Galvanic Battery. A. M. G. Sebillot, Denver, Col.
- Lamp, Electric. A. L. Airey, Cleveland, Ohio.
- Lamp, Electric. A. M. G. Sebillot, Denver, Col.
- Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.
- Lamp, Electric. W. L. Voelker, Morton, Pa.
- Lamp, Incandescent Electric. W. L. Voelker, Morton, Pa.
- Lamp, Incandescent Electric. W. L. Voelker, Morton, Pa.
- Magneto-Electric Machine. Jno. B. Blair, Chicago, Ill.
- Magneto-Electric Machine. M. A. Hardy, Newport, R.I.
- Railway Signaling Apparatus. F. L. Pope, Hartford, Ct.
- Telegraph Signal Box, District and Alarm. G. M. Phelps, Brooklyn, N.Y.
- Telegraph Wires, Supporting. Samuel Turner, Cincinnati, Ohio.
- Telephone Receiver. G. L. Anders, Boston, Mass.
- Telephone Receiver. S. H. Bartlett and H. E. Waite, Bridgeport, Ct.
- Telephone Relay. H. E. Waite, Bridgeport, Ct.
- Telephone Signal Generator. J. F. Gilleland, Indianapolis, Indiana.
- Telephone Transmitter. S. M. Allen, Duxbury, Mass.

## FEBRUARY 21ST.

- Electric Machine, Dynamo. W. E. Sawyer, New York.
- Electric Wires, Safety Device for. Samuel M. Plush, Philadelphia, Pa.
- Electro-Magnetic Relay. C. A. Randall, New York.
- Lamp, Electric. H. S. Maxim, Brooklyn, N.Y.
- Lamp, Electric. G. W. Sawyer, New York, N.Y.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

- 253,958 Lamp, Electric. E. Thomson, N. Britain, Ct.
- 253,955 Lantern for Electric and other Lights. L. Stieringer, New York, N.Y.
- 253,957 Telegraphic Apparatus. B. Thompson and C. Selden, Toledo, Ohio.
- 254,061 Telegraphic Receiving Instrument. G. Smith, Astoria, N.Y.
- 253,833 Telephone Call Register. W. J. Denver and W. W. Sawyer, Springfield, Mass.
- 253,912 Telephone Station Apparatus. G. W. Coy, Milford, Ct.
- 253,941 Telephone Switch. J. B. Odell, Chicago, Ill.
- 253,977 Telephone Transmitter, Carbon. G. D. Clark, Chicago, Ill.
- 253,962 Watchman's Electric Register. G. G. Weitz, Boston, Mass.

## FEBRUARY 28TH.

- 254,336 Burglar Alarm, Electric. M. H. Kerner, New York.
- 254,389 Electrical Switch Board. C. E. Scribner, Chicago, Ill.
- 254,261 Lamp, Electric. F. H. Beers, Newark, N.J.
- 254,268 Telegraph Line, Underground. D. Brooks, Philadelphia, Pa.
- 254,297 Telegraph, Quadruplex. S. D. Field, New York.
- 254,220 Telegraph, Sextuplex. F. W. Jones, New York.
- 254,155 Telephone Line Signal Call. F. E. Richmond, Springfield, Mass.
- 254,190 Telephone Transmitter. E. Berliner, Boston, Mass.

## MARCH 7TH.

- 254,699 Burglar Alarm, Electric. H. C. Roome, Jersey City, N.J.
- 254,546 Electric Light Regulator. J. H. Guest, Brooklyn, N.Y.
- 254,597 Electric Meter. C. V. Boys, Wing, England.
- 254,676 Galvanic Battery. A. Michaud, Paris, France.
- 254,610 Insulator for Telegraph Wires. W. H. Capewell, Philadelphia, Pa.
- 254,641 Lamp, Electric. J. H. Guest, Brooklyn, N.Y.
- 254,780 Lamp, Electric Incandescent. E. A. Scribner, Newark, N.J.
- 254,762 Lamp Regulator, Electric. B. B. Brewer and A. G. Waterhouse, Sacramento, California.
- 254,672 Lamps, Carbon for Electric. H. S. Maxim, Brooklyn, N.Y.
- 254,764 Lamps, Rheostat for Electric. P. H. Fox, New York.
- 254,743 Magnet, Electro. A. G. Waterhouse, New York.
- 254,523 Reflector and its support, Electric Light. W. Wheeler, Concord, Mass.
- 254,522 Reflectors, Supporter for Electric Light. W. Wheeler, Concord, Mass.
- 254,611 Telegraph Circuit Fire Alarm. R. Carter, New York.
- 254,573 Telephone Lines, Individual Signalling Apparatus for. H. D. Sisson, Mill River, Mass.
- 254,642 Telephonic Receiving Instrument. W. B. Hale, Washington, D.C.

## MARCH 14TH.

- 254,789 Belt, Galvanic. A. A. Baldwin, Iona, Mich.
- 255,066 Electrical Switch-board. T. W. Vail, Boston, Mass.
- 254,948 Electricity, Distribution of Energy by. S. L. Fox, London, England.
- 254,912 Lamp, Electric. V. W. Blanchard, New York.
- 254,977 Telegraphic Transmitter, Automatic. E. L. Hutchinson, New York.
- 255,031 Telephone Exchange Circuit and Apparatus. J. I. Sabin, San Francisco, California.

## MARCH 21st.

- 255,309 Carbon Conductors, Manufacture of. H. S. Maxim, Brooklyn, N.Y.
- 255,236 Electric Drill. C. E. Ball, Philadelphia, Pa.
- 255,364 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 255,366 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 255,137 Electric Machines. Armature for Dynamo. G. H. Brown, New York.
- 255,311 Electric Machines, Regulator for Dynamo. H. S. Maxim, Brooklyn, N.Y.
- 255,310 Electric Machines, Speed Regulator for Dynamo. H. S. Maxim, Brooklyn, N.Y.
- 255,306 Electrical Meter. H. S. Maxim, Brooklyn, N.Y.
- 255,307 Electrical Meter. H. S. Maxim, Brooklyn, N.Y.
- 255,308 Electrical Meter. H. S. Maxim, Brooklyn, N.Y.
- 255,124 Electricity, Apparatus for Signalling by. J. W. Stover, Newton, Mass.
- 255,148 Lamp, Electric. L. E. Curtis and E. Weston.
- 255,277 Lamp, Electric. C. H. Gerningham, Newcastle-upon-Tyne, England.
- 255,170 Lamp, Electric. A. G. Holcombe, New York.
- 255,171 Lamp, Electric. A. G. Holcombe and L. R. Colborne, New York.
- 255,304 Lamp, Electric. H. S. Maxim, Brooklyn, New York.
- 255,305 Lamp, Electric. H. S. Maxim, Brooklyn, New York.
- 255,186 Lamp, Electric. J. Olmsted, New York.
- 255,223 Lamp, Electric. A. G. Waterhouse, New York.
- 255,363 Lamp, Electric. E. Weston, Newark, N.J.
- 255,225 Lamp, Electric. E. Weston and L. E. Curtis, Newark, N.J.
- 255,219 Lamp, Incandescent, Electric. W. L. Voelker, Morton, Pa.
- 255,362 Lamp, Absorbent for Electric. E. Weston, Newark, N.J.
- 255,212 Lamps, Globe Supporter for Electric. I. Tregoning, Philadelphia, Pa.
- 255,365 Magnet, Electro. E. Weston, Newark, N.J.
- 255,248 Secondary Batteries, Charging. C. E. Buell, New Haven, Conn.
- 255,249 Secondary Batteries, Charging and Discharging. C. E. Buell, New Haven, Conn.
- 255,332 Telegraph, Automatic. C. A. Randall, New York.
- 255,295 Telegraph, Quadruplex. F. W. Jones, New York.
- 255,373 Telegraph Relay and Repeating Instrument. I. R. Woodfill, Aurora, Ill.
- 255,378 Telegraphic Instrument Protector. M. D. Connolly, Philadelphia, Pa.
- 255,354 Telephone. H. S. Thornberry, Winona, Minnesota.
- 255,174 Telephone, Acoustic. J. A. Lakin, Westfield, Mass.
- 255,377 Telephone Circuits, Utilizing Secondary Batteries on. C. E. Buell, New Haven, Conn.
- 255,158 Telephone, Electric. J. P. Freeman, Chicago, Ill.
- 255,159 Telephone, Electric. J. P. Freeman, Chicago, Ill.
- 255,192 Telephone, Electric. T. T. Prosser and J. P. Freeman, Chicago, Ill.
- 255,333 Telephone Relay. C. A. Randall, New York.
- 255,239 Telephone System. E. Berliner, Boston, Mass.

## MARCH 28TH.

- 255,661 Electrical Apparatus, Device for Connecting Wires in. W. Paul, Ansonia, Ct.
- 255,597 Galvanic Battery. W. A. Childs and F. Shaw, Englewood, N.J.
- 255,524 Gas Lighter, Electric. A. Mahon and W. J. Green, Washington, D.C.
- 255,521 Lamp, Electric. C. Lever, Bowdon, England.
- 255,496 Lamp, Electric. C. W. Siemens, Queen Anne's Gate, England.
- 255,497 Lamp, Incandescent Electric. P. Diehl, Elizabeth, N.J.
- 255,749 Magnets, Armature for Electro. O. C. Woolson, Newark, N.J.
- 255,514 Reflector for Electric Lamps, Adjustable. J. R. F. Kelly, Brooklyn, N.Y.
- 255,628 Telegraph Multiple. B. Thompson and C. Selden, Toledo, Ohio.

# ERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## APRIL 4TH.

etric Circuits, Signalling on. D. H. and L. C. Rice, Lowell, Mass.  
etric Generator and Motor. J. H. Bunnell, Brooklyn, N.Y.  
etric Light Regulator. N. S. Keith, New York.  
etric Machine-Dynamo. P. Von Hefner-Alteneck, Berlin, Germany.  
ectrical Distributors, System of. E. Thomson, N. Britain, Ct.  
ulator for Electrical Conductors. A. C. Lewis, Brooklyn, N.Y.  
mp, Electric. N. S. Keith, New York.  
mp, Electric. C. D. Jenney, South Bend, Ind.  
mp, Electric. J. J. Wood, Brooklyn, N.Y.  
condary Voltaic Cells. J. W. Swan, Newcastle, England.  
legraph Sounder, Mechanical. J. H. Bunnell, New York.  
lephone. E. H. Amet and W. S. D. Hunt, La Grange, Ill.  
lephone Exchange Apparatus. C. E. Buell, New Haven, Ct.  
ermo-Electric Battery. A. Patterson, Idlewood, Pa.

## APRIL 11TH.

nnunciator. J. G. Arnold, Worcester, Mass.  
ock, Electric. J. Schweizer, Soleure, Switzerland.  
etric Machine, Dynamo. H. B. Sheridan, Cleveland, Ohio.  
etric Machine, Dynamo. H. B. Sheridan, Cleveland, Ohio.  
etric Machine, Dynamo. W. Wheeler, Concord, Mass.  
ectrical Carbons. Draw Plate for Preparing Fibrous Filaments. J. H. Guest, Brooklyn, N.Y.  
ectrical Carbons, Forming and Treating. J. H. Guest, Brooklyn, N.Y.  
ectrical Relay. C. Ader, Paris, France.  
vernor, Electrical. H. Linton, Alleghany, Pa.  
agnetic-Electric Generator for Signaling Purposes. J. G. Arnold, Worcester, Mass.  
condary Batteries, Device for Charging and Discharging. C. E. Buell, New Haven, Ct.  
legraph, Chemical. W. C. Taucke, New York.  
legraph Line, Underground. W. D. Smith, Boston, Mass.  
lephone, Exchange System. T. A. Watson, Everett, Mass.

## APRIL 18TH.

itch and Signal Locking Apparatus. O. Gassett, Boston, Mass.  
lt, Electric. T. W. Williams, Milwaukee, Wis.  
ocks, Striking Device for Electric and other. A. Lemoine, Paris, France.  
etric Light. C. P. Hoenack, New York.  
etric Light, Carbon. J. B. King, Brooklyn, N.Y.  
etric Light Guard. W. McDevitt, Philadelphia, Pa.  
etric Machine, Dynamo. G. H. Bange, New York.  
etric Machine, Dynamo. E. Werton, Newark, N.J.  
etric Machine, Dynamo. L. G. Woolley, Mendon, Mich.  
etric Motor. J. D. Kiely, Toronto, Canada.  
etric Signal Transmitter. I. King, Ansonia, Ct.  
ectro-Magnetic Motor. L. G. Woolley, Mendon, Mich.  
slvanic Battery. G. M. Hopkins, Brooklyn, N.Y.  
as and Electric Lamp Fixture Combined. E. H. Johnson, New York.  
mp, Electric. C. P. Hoenack, New York.  
mp, Electric. C. T. Holloway, Baltimore, Md.  
mp, Electric. E. J. Houston, Philadelphia, Pa.  
mp, Electric. L. Sezaner, Brooklyn, N.Y.  
mp, Electric. E. Thomson, N. Britain, Ct.  
mp, Electric. L. G. Woolley, Mendon, Mich.  
ELEGRAPH KEY. G. CUMMING, 219, EAST EIGHTEENTH-STREET, NEW YORK.  
ELEGRAPHIC ELECTRODE. G. CUMMING AND C. M. BRINKERHOFF, NEW YORK. (See Periphery-  
Contact Advertisement.)  
legraphy, Rheostat for Multiple. M. Buell, Buffalo, N.Y.  
lephone Repeater. I. G. Smith, Hackensack, N.J.  
lephonic Receiver. Charles Cuttress, Duxbury, and George F. Milliken, Boston, Mass.  
ydrants and Water Mains, Electric Alarm for. W. Thompson, Cutchoque, N.Y.

## APRIL 25TH.

etric Communication, Device for Underground. B. T. Teal, Philadelphia, Pa.  
etric Machine, Dynamo. W. Hockhausen, New York.  
etric Meter. C. V. Boys, Wing, England.  
lectrical Generation and Distribution, System of. H. S. Maxim, Brooklyn, N.Y.  
lectro-Magnetic Escapement Mechanism. J. M. Gardiner, Hackensack, N.J.  
as Lighting Apparatus, Electrical. T. H. Rhodes, Brooklyn, N.Y.  
legraph Wires, Apparatus for Sustaining. H. A. Chase, Lynn, Mass.  
lephone. A. H. Heatzman, Baltimore, Md.  
lephone Alarm. J. F. Kettell, Worcester, Mass.  
lephone Receiver. R. M. Lockwood, New York.  
lephone Receiver. R. M. Lockwood, New York.  
nderground Cable-way. Hy. Casebolt, San Francisco, Cal.

## MAY 2ND.

ell Signal, Electric Call. J. F. Kettell, Worcester, Mass.  
ngular Alarm. W. D. Matney, Harvel, Ill.  
lectric Light Circuits, Switch for. S. Bergman, New York, N.Y.  
lectric Lighting Apparatus. E. T. Starr, Philadelphia, Pa.  
lectric Machines by the Motion of a Moving Vehicle, Mechanism for Driving Dynamo. E. T. Starr, Philadelphia, Pa.  
lectric Wires, Underground Conduit for. A. F. McGrew, San Francisco, Cal.  
lectro-Magnetic Locomotives, Wheel for. E. N. Dickerson, Jr., New York, N.Y.  
as Lighter, Electric. W. H. H. Whiting, Chelsea, Mass.  
as Lighting Apparatus, Electrical. T. H. Rhodes, Brooklyn, N.Y.  
nsulating Underground Lines. E. A. Hill, Chicago, Ill.  
mp, Shade Holder, Electric. S. Bergman, New York, N.Y.  
mp Socket, Electric. S. Bergman, New York, N.Y.  
agneto-Electric Machines, Armature for. F. H. Beers, Newark, N.J.  
ailway Signal, Electric. C. J. Means, Boston, Mass.  
legraph Quadruplex. H. C. Nicholson, Kenton, Ky.  
lephone Central Office System. G. M. Hopkins, New York, N.Y.  
lephone Transmitter. G. M. Hopkins, Brooklyn, N.Y.



## MAY 9TH.

- 257,776 Candle, Electric. L. Solignac, Paris, France.
- 257,678 Electric Light. E. A. Edwards, Cincinnati, Ohio.
- 257,588 Electric Light Regulator. N. S. Keth, New York, N.Y.
- 257,800 Electric Light Regulator. J. J. Wood, Brooklyn, N.Y.
- 257,683 Insulating Conductors, Alarm for Detecting Defects in. L. Finger, Melrose, Mass.
- 257,566 Magneto-Electric Machines, Commutator for. A. H. Eddy, Hartford, Conn.
- 257,695 Mines, etc., Electrical Device for Operating Submerged. G. E. Haight, Hartford, Conn.
- 257,499 Telegraphy, Multiple. J. W. Larish, Buffalo, N.Y.
- 257,677 Telephone. T. A. Edison, Menlo Park, N.J.
- 257,686 Telephone, Electric. J. P. Freeman, Chicago, Ill.
- 257,610 Telephone, Electric. T. T. Prosser and J. P. Freeman, Chicago, Ill.
- 257,664 Telephone Exchange System. G. W. Coy, Milford, Conn.
- 257,621 Telephone Line, Signaling Apparatus for. J. G. Smith, Hackensack, N.J., and C. E. Buell, New Haven, Conn.
- 257,687 Telephone Transmitter. L. P. Freeman, T. T. and H. B. Prosser, Chicago, Ill.
- 257,453 Telephonic Transmission of Sound from Theatres. C. Ader, Paris, France.
- 257,693 Torpedo Boats, Current Controlling Device for. G. E. Haight, Hartford, Conn.
- 259,694 Torpedo Boats, Device for Controlling. G. E. Haight, Hartford, Conn.

## MAY 16TH.

- 257,875 Electric Bath. G. W. Lawson, Brooklyn, N.Y.
- 257,988 Electric Lights, Shunting Device for. C. J. Van Depoele, Chicago, Ill.
- 257,999 Electric Machines, Armature for Dynamo. C. E. Ball, Philadelphia, Pa.
- 258,022 Electric Machines, Commutator for Dynamo. C. A. Cooley, New Britain, Conn.
- 257,990 Electric Motor and Generator, Combined. C. J. Van Depoele, Chicago, Ill.
- 257,948 Electric Signal. R. M. Hunter, Philadelphia, Pa.
- 258,149 Electricity, Lighting Cars by. W. A. Stern and H. M. Byllerby, New York, N.Y.
- 258,136 Gas Lighter, Electric. W. D. Schooley, Richmond, Ind.
- 257,989 Lamp, Electric Arc. C. J. Van Depoele, Chicago, Ill.
- 258,130 Lightning, Protecting Oil Tanks from. F. G. Sackett, Knox, Pa.
- 257,889 Lightning Rod Coupling. T. H. Patee, Greencastle, Ind.
- 257,890 Lightning Rod Coupling. T. H. Patee, Greencastle, Ind.
- 257,891 Lightning Rod Coupling. T. H. Patee, Greencastle, Ind.
- 258,152 Telegraph and Messenger Service Box. C. N. Talbot, New York, N.Y.
- 258,103 Telegraph, Duplex. G. S. Mott, Philadelphia, Pa.
- 257,877 Telegraph Printing. J. H. Longstreet, Hoboken, N.J., and J. E. Wright, New York, N.Y.
- 258,005 Telegraph Wires, &c., Balloon Support for. W. Beeson, Miles City, Montana.
- 258,061 Telegraph Wires, Screw for Fastening. A. J. Haviland, Fort Dodge, Iowa.
- 258,040 Telephone Transmitter. C. Ewing, Washington, D.C.

## MAY 23RD.

- 258,234 Annunciator Board and Circuit for Telephone Exchanges. M. G. Kellogg, Hyde Park, Ill.
- 258,537 Annunciator, Electrical. A. Lungen, New York, N.Y.
- 258,458 Burglar Alarm. P. Moran, Philadelphia, Pa.
- 258,383 Electric Motor. L. Daft, Greenville, N.J.
- 258,214 Electro-plating, Apparatus for. A. Brinckmann, Astoria, New York.
- 258,240 Lamp, Electric. J. J. McTighe, Pittsburg, Pa.
- 258,244 Lamp, Electric-Arc. R. R. Moffatt, Brooklyn, N.Y.
- 258,406 Lamp, Electric-Arc. M. J. O'Sullivan, Baltimore, Md.
- 258,521 Lamp, Safety Device Electric. J. J. Wright, Philadelphia, Pa.
- 258,966 Telegraph, Duplex. C. L. Buckingham, Elizabeth, N.J.
- 258,967 Telegraph, Duplex. C. L. Buckingham, Elizabeth, N.J.
- 258,428 Telegraph, Duplex. F. W. Jones, New York, N.Y.
- 258,356 Telegraph, Harmonic. E. Berliner, Boston, Mass.
- 258,210 Telegraph Lines, Support for Underground. T. B. Atterbury, Pittsburg, Pa.
- 258,439 Telegraph for Printing. A. A. Knudson, New York.
- 258,361 Zinc for Batteries. H. J. Brewer, New York, N.Y.

## MAY 30TH.

- 258,735 Annunciator, Electrical. F. E. Fisher, Detroit, Mich.
- 258,818 Clocks, Electric Motor for. L. H. Speller, Doylestown, Pa.
- 258,627 Electric Individual Signal Apparatus. C. E. Buell, New Haven, Conn.
- 258,625 Electric Individual Signaling Apparatus. C. E. Buell, New Haven, Conn.
- 258,648 Electric Machine, Dynamo. E. J. Houston, Philadelphia, Pa.
- 258,649 Electric Machine, Dynamo. E. J. Houston, Philadelphia, Pa.
- 258,864 Electric Machine, Dynamo. H. J. Müller, New York, N.Y.
- 258,800 Electric Machine, Dynamo. W. J. Parker, New York, N.Y.
- 258,561 Electric Switch-board and Plug. D. Dewar, Indianapolis, Ind.
- 258,867 Galvanic Battery. J. Kidder, Brooklyn, N.Y.
- 258,795 Glass Globe for Electric and other Lights. J. D. Müller, New York, N.Y.
- 258,549 Insulating Material for Electrical Conductors. F. Borel, Cortaillod, Switzerland.
- 258,581 Lamp, Electric Arc. C. A. Hussey, New York, N.Y.
- 258,805 Lamp, Electric Arc. R. J. Pratt, Troy, N.Y.
- 258,684 Lamp, Electric Arc. E. Thomson, New Britain, Conn.
- 258,546 Lamp, Electric Incandescent. E. Berliner, Boston, Mass.
- 258,747 Lamp, Electric Incandescent. J. H. Guest, Brooklyn, N.Y.
- 258,600 Railway Signal, Electric. T. A. B. Putnam, New York, N.Y.
- 258,742 Railway Signals, Magneto-Generator for. W. W. Gury, Boston, Mass.
- 258,601 Railway Switches, &c., Electric Safety Appliance for. T. A. B. Putnam, New York, N.Y.
- 258,636 Railway Trains, Electrical Connection for. J. B. Low, Pulaski, N.Y.
- 258,636 Telegraph, Duplex. J. E. Fenn, Elizabeth, N.J.
- 258,825 Telegraph Keys, Circuit Closer for. J. A. Timmerman, Odessa, Ontario, Ca.
- 10,123 Telegraph Line, Underground (re-issue). R. Brooks, Philadelphia, Pa.
- 258,868 Telephone Exchange, Switch-board. C. W. Ross and G. H. Twiss, Columbus, Ohio.
- 258,681 Telephone Exchanges, Signaling Apparatus for. J. G. Smith, Hackensack, N.J.
- 258,623 Telephone Systems, Individual Signaling Apparatus for. C. E. Buell, New Haven, Conn.
- 258,757 Telephone Transmitter. G. M. Hopkins, Brooklyn, N.Y.
- 258,603 Time Detector, Electric. J. E. Richards, Cedar Keys, Fla.

## JUNE 6TH.

- 259,066 Clock, Electric Spring. W. D. Whalen, Howell, Mich.
- 259,044 Electric Conductor, Underground. G. Richardson, Philadelphia, Pa.
- 259,045 Electric Conductors, Underground Conduit for. G. Richardson, Philadelphia, Pa.
- 10,134 Electric Lighting System. W. E. Sawyer, New York, N.Y., and A. Man (re-issue), Brooklyn, N.Y.
- 259,057 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.



# **L. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

- 1 Electric Machine, Dynamo. C. J. Van Depoele, Chicago, Ill.
- 2 Electric Push-Button. G. C. Maynard, Washington, D.C.
- 3 Electric Wires, Underground Conduit for. C. H. Goebel, Philadelphia, Pa.
- 4 Electrical Conductor, Underground. G. Richardson, Philadelphia, Pa.
- 5 Electrical Fixture. L. Stieringer, New York, N.Y.
- 6 Electrical Signaling Circuit. T. D. Lockwood, Malden, Mass.
- 7 Electrical Switch-boards, Plug for. H. W. Laland, South Framingham, Mass.
- 8 Fire Alarm Box Apparatus. J. J. Brophy, New York, N.Y.
- 9 Gas Jets, Electric Device for Turning on, Lighting and Extinguishing. A. L. Bogart, Jamaica, N.Y.
- 1 Insulation, Preparation of Materials for use in Electric. J. A. Fleming, University College, Nottingham, County of Nottingham, Eng.
- 5 Lamp Bracket, Electric. E. Weston, Newark, N.J.
- 1 Lamp, Electric. C. A. Cheever, New York, N.Y.
- 3 Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.
- 4 Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.
- 2 Lamp, Electric. C. J. Van Depoele, Chicago, Ill.
- 14 Lamp, Electric. E. Weston, Newark, N.J.
- 7 Lamp, Electric Arc. J. H. Guest, Brooklyn, N.Y.
- 75 Lamp, Electric Incandescent. A. Bernstein, New York, N.Y.
- 35 Lamp, Electric Incandescent. M. G. Farmer, Newport, R.I.
- 63 Lamp, Electric Incandescent. J. H. Guest, Brooklyn, N.Y.
- 17 Lamp, Electric Incandescent. E. J. Houston, Philadelphia, Pa.
- 63 Lamp, Incandescent. J. V. Nichols, Brooklyn, N.Y.
- 63 Lamp, Incandescent. E. Weston, Newark, N.J.
- 102 Lamp, Carbon for Incandescent. J. V. Nichols, Brooklyn, N.Y.
- 71 Musical Instruments, Electro-Magnetization for. C. N. Andrews, San Francisco, Cal.
- 105 Telegraph, Automatic. G. Smith, Astoria, N.Y.
- 105 Telegraph, Duplex. B. F. Dillon, Savannah, Ga., and J. W. Brown, Augusta, Ga.
- 107 Telegraph, Duplex. B. Thompson and C. Selden, Toledo, O.
- 107 Telegraphic Receiving Instrument. G. Smith, Astoria, N.Y.
- 107 Telegraphic Receiving Instrument. G. Smith, Astoria, N.Y.
- 101 Telephone. J. W. Clark, Etna, O.
- 10 Telephone Attachment. J. C. Chambers, Cincinnati, O.
- 10 Telephone, Central Office Switch. M. J. Carney, Toledo, O.
- 104 Telephonic Switch Apparatus. H. W. Cozens, Newport, R.I.
- 115 Toy, Electric. R. N. Dyer and H. W. Seeley, New York, N.Y.
- 104 Flat Iron, Electric. H. W. Seeley, New York, N.Y.

## **JUNE 13TH.**

- 107 Candle Holder, Electric. C. A. Cheever, New York, N.Y.
- 104 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.
- 104 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.]
- 104 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.
- 102 Electric Lighting for Railway Trains, System of. C. E. Buell, New Haven, Conn.
- 107 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 105 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 100 Electric Safety Elevator. H. B. Sheridan, Cleveland, O., and H. A. Gorn, New York, N.Y.
- 100 Electric Switch Board. T. W. Lane, Boston, Mass.
- 104 Electro-magnetic Motor. G. Little, Passaic, N.J.
- 107 Lamp, Electric Arc. F. H. Burger, Plainfield, N.J.
- 102 Lamps, Device for Suspending Electric Arc. A. G. Waterhouse, New York, N.Y.
- 109 Railway Electric. C. H. Rudd, Evanston, Ill.
- 107 Railway Signal. Magneto-Electric. J. B. and O. B. Johnson, Boston, Mass.
- 104 Telegraph Transmitter, Printing. H. Van Hovenbergh, Elizabeth, N.J.
- 102 Telephone Call Register. I. W. See, Hamilton, O.
- 102 Telephone Circuit. G. H. Bliss, Pittsfield, Mass.
- 102 Telephone Signaling Circuit. G. H. Bliss, Pittsfield, Mass.
- 102 Telephonic and Telegraphic Signaling Apparatus. A. C. Brown and H. A. C. Saunders, London, Eng.
- 104 Magneto-Generator. T. W. Lane, Boston, Mass.
- 107 Secondary Battery. J. S. Sellon, Hatton Garden, Eng.

## **JUNE 20TH.**

- 106 Burglar Alarms, Electrical Connection for. J. A. Davis, Philadelphia, Pa.
- 109 Electric Detecting Apparatus for Watchmen. C. W. Hubbard, Boston, Mass.
- 100 Electric Detecting Apparatus for Watchmen. C. W. Hubbard, Boston, Mass.
- 101 Electric Wires, Pipe for Underground. P. J. Duggan, Boston, Mass.
- 101 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.
- 106 Fire Alarms, Electric Conductor for. P. A. Charpentier, Paris, France.
- 106 Lamp, Electric Arc. L. J. Gülcher, Biala, Austria.
- 103 Lamp, Incandescent, Electric. J. Jameson, Newcastle-upon-Tyne, Eng.
- 101 Medical Purposes, Electrical Apparatus for. W. Humans, Cambridgeport, Mass.
- 101 Telegraph, Telephone and other Wires, Underground Conduit for. T. J. Agnew, Philadelphia, Pa.
- 109 Telegraphic Circuits, Utilizing Secondary Batteries on. C. E. Buell, New Haven, Conn.
- 107 Dispatch Tube, Electro-Magnetic. C. A. Cheever, New York, N.Y.

## **JUNE 27TH.**

- 10,099 Electric Light. P. O. Jenkins, Washington, D.C.
- 10,122 Electric Machine, Dynamo. E. A. Sperry, Cortland, N.Y.
- 10,126 Electric Machine Regulator, Dynamo. R. Thury, Geneva, Switzerland.
- 10,110 Electric Machines, Armature for Dynamo. J. J. and T. J. McTighe, Pittsburgh, Pa.
- 10,111 Electric Machines, Commutator for Dynamo. J. J. and T. J. McTighe, Pittsburgh, Mass.
- 10,067 Electrical Switch-board. T. N. Vail, Boston, Mass.
- 10,373 Insulating and Protecting Telegraph Wires, etc., Device for. W. E. Banta, Springfield, O.
- 10,255 Lamp, Electric. J. Du Shane, South Bend, Ind.
- 10,304 Lamp, Electric Arc. C. A. Humsey, New York, N.Y.
- 10,295 Lamp, Incandescent Electric. J. W. Swan, Newcastle-upon-Tyne, Eng.
- 10,347 Lamps, Apparatus for Manufacturing Carbon Filaments for Incandescent. M. M. M. Slattery, New York, N.Y.
- 10,305 Lamps, Apparatus for Suspending Electric. C. C. Jennings, Buffalo, N.Y.
- 10,305 Telegraph, Duplex. F. W. Jones, New York, N.Y.
- 10,305 Telegraphic Receiving Instrument. W. H. Markland, Brooklyn, N.Y.
- 10,160 Telephone Signaling and Receiving Apparatus. C. Ewing, Washington, D.C.

## JULY 4TH.

- 260,718 Brush, Electric. J. W. Weakley, Jr., Bond Hill, Ohio.  
 260,536 Burglar Alarm, Electric. C. E. Chinnoek, Brooklyn, N.Y.  
 260,646 Electric Condenser. S. Borden, Fall River, Mass.  
 260,651 Electric Current Generators, Thermic Regulator for. C. F. Brush, Cleveland, O.  
 260,624 Electric Lighting. E. T. Starr, Philadelphia, Pa., and W. J. Peyton, Washington, D.C.  
 260,652 Electric Machine, Dynamo. C. F. Brush, Cleveland, O.  
 260,541 Electric Machine, Dynamo. J. A. I. Craig, Montreal, Quebec, Canada.  
 260,480 Electric Machine, Dynamo. C. Heisler, St. Louis, Mo.  
 260,575 Electric Machine Regulator, Dynamo. J. H. Irwin, Morton, Pa.  
 260,623 Electric Motors, Controlling. E. T. Starr, Philadelphia, Pa.  
 260,548 Electric Wires, Underground Conduit for. J. S. Du Bois, Haddonfield, N.J.  
 260,574 Electro Motor. J. H. Irwin, Morton, Pa.  
 260,650 Governor for Dynamo-Electric Machines, Current. C. F. Brush, Cleveland, O.  
 260,647 Lamp, Electric Arc. S. Borden, Fall River, Mass.  
 260,600 Lamp, Electric Incandescent. H. J. Müller, New York, N.Y.  
 260,562 Lamp Switch and Indicator, Electric. E. T. Greenfield, Brooklyn, N.Y., and C. S. Bradley, New York, N.Y.  
 260,408 Pumping Apparatus, Electric. C. C. Peck and W. H. Chapman, Middlebury, Vt.  
 260,653 Secondary Battery. C. F. Brush, Cleveland, O.  
 260,654 Secondary Battery. C. F. Brush, Cleveland, O.  
 260,449 Telegraph Key. T. Burn, Chicago, Ill.  
 260,667 Telephone Exchange Switch Apparatus. G. W. Coy, Milford, Conn.  
 260,488 Telephone Transmitter. H. B. Lytle, Boston, Mass.

## JULY 11TH.

- 260,751 Clock, Electric. C. Gullberg, Jersey City, N.J.  
 260,982 Electric Call. G. W. Howser, Chicago, Ill.  
 261,077 Electric Circuit System. C. F. Brush, Cleveland, O.  
 260,937 Electric Light Systems, Switch for. W. D. Candee, Brooklyn, N.Y.  
 260,806 Electric Machine, Dynamo. C. D. Haskins, and C. M. Lungren, New York, N.Y.  
 261,118 Electrical Apparatus, Statical. E. B. Benjamin, New York, N.Y.  
 260,859 Galvanic Battery. C. Friedel, Madison, Wis.  
 261,043 Gas Lighter, Electric. T. H. Rhodes, Brooklyn, N.Y.  
 260,806 Gas Lighting Apparatus, Automatic Electric. J. P. Tirrell, Boston, Mass.  
 260,804 Gas Lighting Apparatus, Electric. J. P. Tirrell, Boston, Mass.  
 260,805 Gas Lighting Apparatus, Electric. J. P. Tirrell, Boston, Mass.  
 260,925 Lamp, Electric Arc. C. E. Ball, Philadelphia, Pa.  
 260,975 Lamp, Electric Arc. J. H. Guest, Brooklyn, N.Y.  
 261,091 Lamp, Electric Arc. C. D. Haskins, New York, N.Y.  
 261,067 Lamp, Electric Arc. E. Thomson, New Britain, Conn.  
 260,864 Lamps, Circuit Closing Key for Electric. J. H. Guest, Brooklyn, N.Y.  
 260,737 Telephone, Acoustic. L. Beecher, Medina, N.Y.  
 260,884 Telephone Lines, Electrical Signaling Apparatus for. T. D. Lockwood, Malden, Mass.  
 260,883 Telephone System. T. D. Lockwood, Malden, Mass.  
 260,939 Telephone System and Apparatus. C. E. Chinnoek, Brooklyn, N.Y.

## JULY 18TH.

- 261,172 Bell, Electric. H. B. Porter, Chicago, Ill.  
 261,288 Commutator and Armature Wires, Coupling for. J. J. Wood, Brooklyn, N.Y.  
 261,235 Electric Bath. W. W. Karshner, Washington, D.C.  
 261,262 Electric Light Apparatus. A. A. Seymour, Washington, D.C.  
 261,260 Electric Light Mast. H. A. Seymour, Washington, D.C.  
 261,490 Electric Lighting and Power Distributing System. E. T. Starr, Philadelphia, Pa., and W. J. Peyton, Washington, D.C.  
 261,265 Electric Lighting Systems, Thermostatic, cut out for. H. A. Seymour, Washington, D.C.  
 261,380 Electric Machine, Dynamo. D. A. Schuyler, New York, N.Y.  
 261,351 Electric Illumination, Incandescent. J. H. Irwin, Morton, Pa.  
 261,187 Electrical Switch Board for Metallic Circuits. T. N. Vail, Boston, Mass.  
 261,511 Electrodes, Smoothing and Polishing the Surface of Carbon. C. W. Brown, Wakefield, Mass.  
 261,238 Fire Annihilator. I. Kitee, Cincinnati, O.  
 261,475 Fire Extinguishing and Alarm Apparatus. W. Nerscher, Cleveland, O.  
 261,503 Lamp, Automatic Incandescent Electric. W. L. Voelker, Morton, Pa.  
 261,289 Lamp, Electric. J. J. Wood, Brooklyn, N.Y.  
 261,280 Lamp, Electric Arc. C. J. Van Depoele, Chicago, Ill.  
 261,157 Lamp Fixture, Electric. D. N. Hurlbut, Chicago, Ill.  
 261,234 Lamp Globes, Device for Cleaning Electric. J. Jamieson, Newcastle-upon-Tyne, England.  
 261,263 Lamp, Incandescent. H. A. Seymour, Washington, D.C.  
 261,472 Lamp, Multiplex Electric. H. J. Müller, New York, N.Y.  
 261,264 Lamps, Carbon for Electric. H. A. Seymour, Washington, D.C.  
 261,261 Lamps, Carbon for Incandescent. H. A. Seymour, Washington, D.C.  
 261,352 Lantern, Electric. J. H. Irwin, Morton, Pa.  
 261,129 Magneto-Electric Machine. S. B. Blair, Chicago, Ill.  
 261,303 Secondary Batteries, Apparatus for Charging and Discharging. C. E. Buell, New Haven, Conn.  
 261,513 Secondary Batteries, Mode and Device for Charging and Discharging. C. E. Buell, New Haven, Conn.  
 261,512 Secondary Battery. C. F. Brush, Cleveland, O.  
 261,435 Secondary Battery. C. Cuttriss, Leeds, County of York, England.  
 261,189 Sectional Pipe for Underground Electrical Wires. N. U. Walker, Walkers, O.  
 261,370 Telegraph, Railway Train. C. F. McGlashan, Santa Barbara, Cal.  
 261,410 Telegraph, Transmitter, Automatic. H. Van Hovenbergh, Elizabeth, N.J.  
 261,174 Telephone, Acoustic. W. D. G. Quigley, Rockford, Mich.  
 261,186 Telephone Switch Apparatus. T. N. Vail, Boston, Mass.

## JULY 25TH.

- 261,520 Electric Machines, Commutator for Dynamo. R. E. Ball, New York, N.Y.  
 261,712 Electric Machines, Commutator for Dynamo. W. Hochhausen, New York, N.Y.  
 261,677 Gas by Electricity, Apparatus for Lighting. C. L. Clarke and J. Leigh, Manchester, County of Lancashire  
 261,815 Lamp, Electric Arc. J. A. and C. D. Jenny, Fort Wayne, Ind.  
 261,790 Lamp, Electric Arc. E. Thomson, New Britain, Conn.  
 261,741 Lamps and Carbons for the same, Making Electric. H. S. Maxim, Brooklyn, N.Y.  
 261,788 Telegraph, Duplex. B. Thompson, Buffalo, N.Y.  
 261,507 Telegraph, Printing. E. A. Schoettel, Brooklyn, N.Y.  
 261,649 Telegraph, Telephone and other Wires, Underground Conduit for. J. B. Appie, Philadelphia, Pa.

# **A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

## **AUGUST 1ST.**

- 1 Electric Arc Light. C. F. de la Roche, Paris, France.
- 2 Electric Battery, Thermo. A. Patterson, Idlewood, Pa.
- 3 Electric Battery, Thermo. Chemical. A. Patterson, Idlewood, Pa.
- 4 Electric Cables, Machine for Making. J. Farrell, Pittsburgh, Pa.
- 5 Electric Conductors, Manufacture of Lead-covered. J. Farrell, Pittsburg, Pa.
- 6 Electric Conductors, Manufacture of Lead-covered. J. Farrell, Pittsburgh, Pa.
- 7 Electric Light Carbon. E. J. Brooks, East Orange, N.J.
- 8 Electric Machines, Armature for Dynamo. H. B. Sheridan, Cleveland, O.
- 9 Electric Machines, Armature for Dynamo. E. A. Sperry, Cortland, N.Y.
- 10 Electric Signal. G. W. Blodgett, Boston, Mass., and A. D. Blodgett, Newton, Mass.
- 11 Electric Wires, Underground Conduit for. S. Anderson, Philadelphia, Pa.
- 12 Electrical Switch Board and Signaling Apparatus. T. W. Lane, Boston, Mass., and F. W. Harrington, Boston, Mass.
- 13 Fire-damp Annunciator. I. Kitsee, Cincinnati, O.
- 14 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 15 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 16 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 17 Lamp, Electric Arc. I. E. Watson, Louisville, Ky.
- 18 Lamp, Electric Arc. I. E. Watson, Louisville, Ky.
- 19 Magneto-Electric Machine. G. Heikel, Jersey City, N.J.
- 20 Secondary Battery. C. F. Brush, Cleveland, O.
- 21 Telegraph and Telephone Signal. W. W. Le Grande, Louisville, Ky.
- 22 Telegraph, Automatic. J. Absterdam, New York, N.Y.
- 23 Telegraph, Automatic. A. L. Parcell, Boston, Mass.
- 24 Telegraph, Automatic. A. L. Parcell, Boston, Mass.
- 25 Telegraph, Duplex. S. D. Field, New York, N.Y.
- 26 Telegraph, Electric. J. Anderson, 88, Old Broad-street, London, Eng., and B. Smith, Princes-street, Hanover-square, County of Middlesex, England.
- 27 Telephone Central Office Apparatus. C. E. Throop, Auburn, N.Y.

## **AUGUST 8TH.**

- 28 Burglar Alarm and Door Bell Electric. J. P. Freeman, New York, N.Y.
- 29 Chandelier, Electrical Extension. S. Bergmann, New York, N.Y.
- 30 Electric Illuminator, Incandescent. J. H. Irwin, Morton, Pa.
- 31 Electric Machine, Dynamo. J. H. Irwin, Morton, Pa.
- 32 Electric Machine, Dynamo. J. A. Jenney, Fort Wayne, Ind.
- 33 Electric Signaling Apparatus. H. W. Southworth, Springfield, Mass.
- 34 Electrical Armature. J. J. Wood, Brooklyn, N.Y.
- 35 Electrical Conductors, Conduit for. S. D. Strohm, Philadelphia, Pa.
- 36 Electrical Generators, Cooling Device for. J. H. Irwin, Morton, Pa.
- 37 Gas and Electric Light Fixture, Combined. S. Bergmann, New York, N.Y.
- 38 Gas by Electricity, Apparatus for Lighting. J. P. Tirrell, Somerville, Mass.
- 39 Lamp, Electric Arc. R. A. Johnston, Cleveland, O.
- 40 Lamp, Electric Arc. C. J. Van Depoele, Detroit, Mich.
- 41 Lamp, Incandescent Electric. J. H. Irwin, Morton, Pa.
- 42 Lamp Safety Device, Electric. J. H. Irwin, Morton, Pa.
- 43 Lamp, Support, Incandescent Electric. J. H. Irwin, Morton, Pa.
- 44 Lamp Switch, Incandescent. C. G. Perkins, New York, N.Y.
- 45 Railway Signals, Magneto-generator for. W. W. Gary, Boston, Mass.
- 46 Secondary Batteries, Making Elements for. C. F. Brush, Cleveland, O.
- 47 Sign, Electrical. J. H. Irwin, Morton, Pa.
- 48 Telegraph, Duplex. G. S. Mott, Philadelphia, Pa.
- 49 Telegraphic Fire Alarm Apparatus. A. Cand, A. H. Palmer, Utica, N.Y.
- 50 Telegraphy, Visual. J. H. Irwin, Morton, Pa.
- 51 Telephone Desk. E. W. Salisbury, Providence, R.I.
- 52 Telephone, Electric. J. P. Freeman, Chicago, Ill.
- 53 Telephone Exchange System. F. O. Vail, Denver, Col.
- 54 Telephone Exchanges, Transferring and Calling. Implement for. L. Mann, Detroit, Mich.
- 55 Telephone Switch. S. H. Bartlett, New York, N.Y., and H. E. Waite, New York, N.Y.

## **AUGUST 15TH.**

- 56 Electric Machine, Dynamo. J. H. Irwin, Morton, Pa.
- 57 Electric Switch. M. D. Connolly, Philadelphia, Pa.
- 58 Electrical Conductors, Subterranean System of. T. N. Vail, Boston, Mass.
- 59 Fire Alarm and Fire Extinguisher, Combined. C. E. Buell, New Haven, Conn.
- 60 Lamp, Electric Arc. G. S. Young, Blackwall, County of Middlesex, Eng., and R. J. Hatton, Stratford, County of Essex, Eng.
- 61 Magneto-Electric Machine. C. Heisler, St. Louis, Mo.
- 62 Telegraph, Duplex. S. D. Field, New York, N.Y.
- 63 Telephone Exchange, Automatic. M. D. Connolly, Philadelphia, Pa.
- 64 Telephone Exchange, Automatic. M. D. Connolly, Philadelphia, Pa., T. A. Connolly, Washington, D.C., T. J. McTigue, Pittsburgh, Pa.
- 65 Telephone Exchanges, Circuit for Multiple Switch Boards of. C. E. Scribner, Chicago, Ill.
- 66 Telephone, Magneto. G. F. Milliken, Boston, Mass.
- 67 Telephone Transmitter. W. W. Jacques, Boston, Mass.
- 68 Telephone Transmitter. R. M. Lockwood, New York, N.Y., and S. H. Bartlett, New York, N.Y.
- 69 Time Recorders, Electrical Circuit for Watchmen. J. F. Gilliland, Indianapolis, Ind.

## **AUGUST 22ND.**

- 70 Chandelier, Electric. T. A. Edison, Menlo Park, N.J.
- 71 Chandelier, Electrical. S. Bergmann, New York, N.Y.
- 72 Electric Arc Light. T. A. Edison, Menlo Park, N.J.
- 73 Electric Machine, Commutator for Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 74 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.
- 75 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 76 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 77 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 78 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 79 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 80 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 81 Electric Signaling Apparatus. A. D. and G. W. Blodgett, and J. P. Tirrell, Boston, Mass.
- 82 Electrical Distributing System. T. A. Edison, Menlo Park, N.J.
- 83 Incandescents, Making. T. A. Edison, Menlo Park, N.J.
- 84 Incandescents, Mold for Carbonizing. T. A. Edison, Menlo Park, N.J.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTIS

- 263,011 Lamp, Electric. A. Bernstein, Boston, Mass.
- 263,135 Lamp, Electric. T. A. Edison, Menlo Park, N.J.
- 263,257 Lamp, Electric. W. L. Voelker, Morton, Pa.
- 263,296 Lamp, Electric Arc. J. Olmsted, Montreal, Quebec, Canada.
- 263,246 Lamp, Electric Arc. W. M. Thomas, Cincinnati, Ohio.
- 263,247 Lamp, Electric Arc. W. M. Thomas, Cincinnati, Ohio.
- 262,941 Lamps, Apparatus for Hanging and Unhanging Electric. H. G. Fiske, Springfield, Mass.
- 263,192 Lamps, Clutch for Electric Arc. N. McCarty, Brooklyn, N.Y.
- 263,139 Lamps, Manufacture of Carbons for Electric. T. A. Edison, Menlo Park, N.J.
- 263,141 Lamps, Straightening Carbons of Electric Incandescent. T. A. Edison, Menlo Park, N.J.
- 263,143 Magneto or Dynamo-Electric Machine. T. A. Edison, Menlo Park, N.J.
- 263,150 Magneto or Dynamo-Electric Machine. T. A. Edison, Menlo Park, N.J.
- 263,132 Railway, Electro-Magnetic. T. A. Edison, Menlo Park, N.J.
- 263,124 Secondary Battery. N. D. Kabath, Paris, France.
- 262,949 Telegraph Instruments, Cut out for. C. T. Howard, Providence, R.I.
- 262,921 Telephone, Operator's Receiving. E. Berliner, Boston, Mass.
- 262,922 Telephone System. E. Berliner, Boston, Mass.
- 262,950 Torpedoes upon Tracks, Apparatus for Placing. T. H. Huewe, Dayton, Ohio.
- 262,971 Tramway and Truck, Electrical Conducting. E. R. Moore, St. Peter, Minn.

## AUGUST 29TH.

- 263,353 Electric Motor. D. T. Piot, Great Titchfield-street, County of Middlesex, Eng.
- 263,627 Electric Wires, Conduit for. R. Thayer, Philadelphia, Pa.
- 263,380 Elevators, Electric Safety Apparatus for. G. W. Baldwin, Chicago, Ill.
- 263,651 Galvanic Battery. C. E. Buell, New Haven, Conn.
- 263,457 Gas Lighting Apparatus, Electric. O. S. Armstrong, Cambridge, Mass.
- 263,404 Lamp, Electric Arc. C. Heisler, St. Louis, Mo.
- 263,622 Lamps, Device for Forming Loops in Terminal Wires for Electric. A. Swan, Gateshead, County of Durham, Eng.
- 263,623 Lamps, Device for Forming Terminal Wires for Electric. A. Swan, Gateshead, County of Durham, Eng.
- 263,304 Lamps, Manufacturing Incandescent Electric. L. F. Betts, Morton, Pa.
- 263,621 Lamps, Mold for Forming the Stems or Closing Pieces for the Bulbs or Globes of Incandescent Electric. Gateshead, County of Durham, Eng.
- 263,423 Lightning Rod Stand. W. B. Munn, Collingswood, N.J.
- 263,419 Sounder, Main Line. L. H. McCulloch, Richmond, Ind.
- 263,586 Telegraph Cables in Pipes, Carriage for Laying Multiple Wire. N. M. Rittenhouse, Baltimore, Md.
- 263,491 Telephone Alarm. W. Dent, Utica, N.Y.
- 263,336 Telephone Case. O. D. Hartwell, Nashua, N.H.
- 263,526 Telephone Dummy. C. R. Jennison, Boston, Mass.
- 263,524 Telephone Exchange System. W. W. Jacques, Boston, Mass.
- 263,554 Telephone or Telegraph Lines, Switch for Grounding. B. McCabe, C. R. Swaid, and J. T. Sutton, Peckham, London, Eng.
- 263,407 Torpedo, Submarine. H. F. Hicks, Minneapolis, Minn.
- 263,408 Torpedoes, Submarine Gun for Protecting. H. F. Hicks, Minneapolis, Minn.

## SEPTEMBER 5TH.

- 263,922 Burglar Alarm. F. A. Langewald, Chicopee, Mass.
- 263,947 Burglar Alarm, Electric. H. F. Neumeyer, Macungie, Pa.
- 264,042 Carbon Conductors, Apparatus for Treating. H. J. Maxin, Paris, France.
- 263,830 Carbon Conductors, Manufacturing. E. Weston, Newark, N.J.
- 263,758 Carbon Rods, Baking. C. F. Brush, Cleveland, Ohio.
- 263,757 Carbon Rods, Process of and Apparatus for Straightening. C. F. Brush, Cleveland, Ohio.
- 263,885 Electric Light Regulator. F. K. Fitch, New York, N.Y.
- 263,870 Electric Machines, Regulator for Dynamo. A. de Khotinsky, St. Petersburg, Russia.
- 263,700 Electro-Medical Induction Coil. T. H. Hicks, London, Ontario, Canada.
- 263,827 Lamp Bracket, Incandescent. E. Weston, Newark, N.J.
- 263,828 Lamp Bracket, Incandescent. E. Weston, Newark, N.J.
- 263,829 Lamp Bracket, Incandescent. E. Weston, Newark, N.J.
- 263,878 Lamp, Electric. T. A. Edison, Menlo Park, N.J.
- 263,801 Lamp, Electric. J. V. Nichols, Brooklyn, N.Y.
- 263,938 Lamp, Electric Arc. J. A. Mondos, Neuilly, Seine France.
- 264,006 Lamp, Electric Arc. E. Weston, Newark, N.J.
- 263,780 Magneto-Electric Machines, Machine for Winding Armatures for. R. Haase and J. P. Becker, Indianapolis, Ind.
- 263,756 Secondary Battery Element. C. F. Brush, Cleveland, Ohio.
- 10,193 Telegraph, Duplex (Re-issue). G. D'Infeville, New York, N.Y.
- 263,759 Telegraph System, District. C. E. Buell, New Haven, Conn.
- 263,862 Telephone Exchange, Automatic. M. D. Connolly, Philadelphia, Pa.
- 263,973 Telephone, Mechanical. F. R. Shaw, Chatham Centre, Ohio.
- 263,926 Telephone Signaling Apparatus. H. B. Lytle, Boston, Mass.
- 264,028 Telephone Transmitter. L. de Locht Labye, Liege, Belgium.

## SEPTEMBER 12TH.

- 264,109 Bell, Polarized. C. E. Scribner.
- 264,299 Electric-circuit Connection. E. H. Johnson, New York, N.Y.
- 264,227 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N.Y.
- 264,228 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N.Y.
- 264,229 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N.Y.
- 264,230 Electric Machine, Commutator for Dynamo. G. W. Beardslee, Brooklyn, N.Y.
- 264,272 Electric Motor. W. K. Freeman, Brooklyn, N.Y.
- 264,268 Electrical Conductors, Coupling Device for. E. H. Johnson, New York, N.Y.
- 264,264 Electric Signaling Apparatus. W. J. Dudley, Boston, Mass.
- 264,304 Galvanic Battery. F. E. Kinsman, New York, N.Y.
- 264,096 Galvanic Battery. L. D. McIntosh, Chicago, Ill.
- 264,328 Lamp, Electric. A. W. Morton, Rahway, N.J.
- 264,346 Lamp, Electric. H. Sedlacek, F. Wilkull, Leben, Austria, and S. Schuckert, Nuremberg, Bavaria, Ger.
- 264,267 Lamp, Electric Arc. F. K. Fitch, New York, N.Y.
- 264,269 Lamp, Electric Arc. W. K. Freeman, Brooklyn, N.Y.
- 264,270 Lamp, Electric Arc. W. K. Freeman, Brooklyn, N.Y.
- 264,257 Lamp, Voltaic-Arc Electric. C. F. De La Roche, Paris, France.
- 264,372 Telegraph, Duplex and Multiplex. B. Thompson, Buffalo, N.Y.
- 264,271 Commutator, Brush Holder. W. K. Freeman, Brooklyn, N.Y.
- 264,211 Secondary Battery. C. F. Brush, Cleveland, Ohio.
- 264,238 Toy, Magnetic. O. J. Dimmick.







## OCTOBER 10TH.

- 265,775 Electric Arc Light. T. A. Edison, Menlo Park, N.J.  
 265,936 Electric Conductors, Preventing Flushing between. E. Thompson, New Britain, Conn.  
 265,776 Electric Lighting System. T. A. Edison, Menlo Park, N.J.  
 265,785 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,853 Electric Machine, Dynamo. H. J. Müller, New York, N.Y.  
 265,779 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,780 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,781 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,782 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,783 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 266,784 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 265,858 Electric Machine Regulator, Dynamo. J. F. Ott, Newark, N.J.  
 265,859 Electric Machine Regulator, Dynamo. J. F. Ott, Newark, N.J.  
 265,937 Electric Machine Regulator, Dynamo. E. Thomson, New Britain, Conn.  
 65,677 Electric Signal. I. Kitsee, Cincinnati, Ohio.  
 265,753 Electric Signaling Apparatus. J. H. Cary, Boston, Mass.  
 265,786 Electrical Transmission of Power, Apparatus for the. T. A. Edison, Menlo Park, N.J.  
 265,750 Electrical Transmitter. G. J. Carney and J. V. Meigs, Lowell, Mass.  
 265,861 Electrode for Batteries. I. Pitkin, Clerkenwell, County of Middlesex, Eng.  
 265,594 Insulating Electrical Wires. G. A. Gage, Chicago, Ill.  
 265,737 Lamp, Electric. G. W. Beardslee, Brooklyn, N.Y.  
 265,790 Lamp, Electric. M. G. Farmer, Newport, R.I.  
 265,810 Lamp, Electric. D. N. Hurlbut, Chicago, Ill.  
 265,670 Lamp, Electric Arc. J. H. Guest, Brooklyn, N.Y.  
 265,777 Lamps, Treating Carbons for Electric. T. A. Edison, Menlo Park, N.J.  
 265,778 Railway Engines, Electro-Magnetic. T. A. Edison, Menlo Park, N.J.  
 265,756 Railway Trains, Electric Signal for. J. F. Clark, Philadelphia, Pa.  
 265,757 Railway Trains, Electric Signal for. J. F. Clark, Philadelphia, Pa.  
 265,645 Telegraph, Multiplex. B. Thompson, Buffalo, N.Y.  
 265,720 Telegraphic Cables, Grapnel for Raising. S. Trott and H. Kingsford, Halifax, Nova Scotia, Canada.  
 265,789 Telegraphic Recording Instrument. S. V. Essick, Alliance, Ohio.  
 265,807 Telephone Switch. T. A. Watson, Everett, Mass.  
 265,621 Underground Conduits, Wire Support for. A. H. Mershon, Philadelphia, Pa.  
 265,774 Weber Meters, Maintaining Temperature in. T. A. Edison, Menlo Park, N.J.  
 265,912 Watchman's Electric Register. G. W. Adams, Boston, Mass.

## OCTOBER 17TH.

- 266,252 Burglar Alarm. M. Decker and J. K. Deming, Chicago, Ill.  
 265,993 Electric Arc Light. E. Thomson, New Britain, Conn.  
 266,241 Electric Circuits, Cut-out for. E. Weston, Newark, N.J.  
 266,171 Electric Conductors, Conduit for Underground. W. Macintosh, Providence, R.I.  
 266,243 Electric Machine, Dynamo or Magneto. E. Weston, Newark, N.J.  
 266,244 Electrical Indicator. E. Weston, Newark, N.J.  
 266,239 Electrical Transmission of Power, System for the. E. Weston, Newark, N.J.  
 266,107 Elevators, Electric Safety Device for. R. M. Curtiss, Brooklyn, N.Y.  
 266,129 Galvanic Battery, Portable. C. Gibbs, New York, N.Y.  
 266,242 Lamp, Electric. E. Weston, Newark, N.J.  
 266,161 Lamp, Electric Arc. O. Kartzmark, New York, N.Y.  
 266,240 Lamp, Electric Arc. E. Weston, Newark, N.J.  
 266,236 Lamps, Carbon Holder for Arc. A. G. Waterhouse, New York, N.Y.  
 266,234 Lamps, Device for Suspending Arc. A. G. Waterhouse, New York, N.Y.  
 266,187 Lamps, Manufacture of Incandescent Electric. J. V. Nichols, Brooklyn, N.Y.  
 266,075 Lightning Rod, Joint or Coupling. C. E. Ball, Philadelphia, Pa.  
 266,235 Magneto or Dynamo Electric Machine. A. G. Waterhouse, New York, N.Y.  
 266,027 Railway Signal, Magneto-Electric. W. W. Gary, Boston, Mass.  
 266,172 Secondary Batteries, Plate for. J. A. Maloney, Washington, D.C., C. H. Koyl, Cobourgh, Ont., Canada.  
 266,090 Secondary Battery. C. F. Brush, Cleveland, Ohio.  
 266,114 Secondary Battery. A. K. Eaton, Brooklyn, N.Y.  
 266,262 Secondary Battery. W. A. Shaw, Brooklyn, N.Y.  
 266,089 Secondary or Storage Battery Element. C. F. Brush, Cleveland, Ohio.  
 266,176 Telegraph Printing. W. J. McCausland, Philadelphia, Pa.  
 266,021 Telephone. T. A. Edison, Menlo Park, N.J.  
 266,022 Telephone. T. A. Edison, Menlo Park, N.J.  
 265,972 Telephone Circuit and Apparatus. W. D. McKinney, Boston, Mass.  
 266,066 Telephone Exchange Mechanical. G. F. Shaver, Erie, Pa.  
 266,043 Telephonic Transmitter. G. F. Milliken, Boston, Mass.

## OCTOBER 24TH.

- 266,405 Annunciator, Electric. J. C. Warner, Chicago, Ill.  
 266,319 Annunciators of Telephone Exchanges, Circuit for. C. E. Scribner, Chicago, Ill.  
 266,353 Electric Cable. F. B. Delany, New York, N.Y.  
 266,290 Electric Generator, Dynamo. R. C. Hindley and W. S. Buffham, Racine, Wis.  
 266,483 Electrical Distribution, Junction for Conductors of Systems of. J. Kruesi, Menlo Park, N.J.  
 266,549 Electrical Fixture. L. Stieringer, New York, N.Y.  
 266,467 Electric Machine. E. Guerin, Paris, France.  
 266,363 Lamp, Electric. C. F. Heinrichs, London, England.  
 266,537 Lamp, Electric Arc. J. D. F. Andrews, Charlton, County of Kent, England.  
 266,455 Lamp, Electric Arc. W. P. Freeman, New York, N.Y.  
 266,447 Lamp, Electric Incandescent. T. A. Edison, Menlo Park, N.J.  
 266,358 Lamp, Electric Incandescent. H. Goebel, New York, N.Y.  
 266,503 Lamp Globes, Apparatus for Creating Vacuums in Incandescent Electric. H. J. Mullen, New York, N.Y.  
 266,592 Telegraphs, Perforator for Automatic Printing. A. F. and F. B. Johnson, Brooklyn, N.Y.  
 266,503 Telegraphs, Perforator for Automatic Printing. A. F. and F. B. Johnson, Brooklyn, N.Y.  
 266,292 Telephone Battery. L. Jacobson.  
 266,344 Telephone, Central Office System and Apparatus. H. W. Breckenridge and J. W. Duxbury, Providence.  
 266,321 Telephone Exchange System. C. E. Scribner.  
 266,287 Telephone Exchanges, Multiple Switch Board for. C. C. Haskins and C. H. Wilson, Chicago, Ill.  
 266,567 Telephone, Magneto. T. A. Watson.  
 266,285 Telephone Switch. C. W. Lewis.  
 266,374 Telephone Switch. C. W. Lewis.  
 266,320 Telephone Switch Board and Pneumatic Signal therefor. C. E. Scribner.  
 266,277 Telephonic Receiver and Automatic Circuit Breaker Combined. W. C. Eckert, J. A. Seeley, E. A. Cincinnati, Ohio.

# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## OCTOBER 31st.

- 8 Carbon Conductors, Apparatus for Heating. T. E. Lockwood, Paris, France.
- 4 Electric Circuits, Implement for Closing and Testing. L. Mann, Detroit, Mich.
- 4 Electric Distribution System. T. A. Addison, Menlo Park, N.J.
- 7 Electric Lines, Conduit for. R. H. Corbett, New York, N.Y.
- 5 Electric Machines, Commutator Brush for Dynamo. W. B. Mason, Boston, Mass.
- 1 Electrical Conductors, Conduit for. G. S. Eaton, Brooklyn, N.Y.
- 5 Electrical Conduit, Underground. S. D. Strohm, Philadelphia, Pa.
- 2 Electrodes for Secondary Batteries, Making. C. F. Brush, Cleveland, Ohio.
- 2 Galvanic Batteries, Containing Vessel for. C. A. Faure, Paris, France.
- 7 Interlocking Apparatus, Hydraulic and Electric. O. Gassett, Boston, Mass.
- 1 Lamp, Incandescent Electric. E. Weston, Newark, N.J.
- 9 Lamps, Shunting Device for Electric. E. Weston, Newark, N.J.
- 9 Magneto or Dynamo-Electric Machine. E. Weston, Newark, N.J.
- 4 Railway Signaling Apparatus, Electric. C. A. Scott, Boston, Mass.
- 5 Railway Train Electric Signaling Apparatus. E. T. Gilliland, Indianapolis, Ind.
- 0 Telephone Switch. S. Bergmann, New York, N.Y.
- 6 Telephone Transmitter. D. Dranbaugh, Eberly's Mill, Pa.
- 8 Telephones, Connecting Device for Operators. L. Mann, Detroit, Mich.
- 6 Telephonic Receiver. S. E. Beedy, Farmington, Me.
- 7 Telephonic Transmitter. S. E. Beedy, Farmington, Me.
- 3 Carbon Black, Apparatus for Manufacturing. J. T. Dysart.

## NOVEMBER 7th.

- 10 Chandelier for Electric Candles. C. A. Cheever, New York, N.Y., and W. L. Candee, Brooklyn, N.Y.
- 10 Clock for Making Electric Signals. R. W. Willson, New Haven, Conn.
- 7 Circuit Closer. L. Waldo, New Haven, Conn.
- 0 Clocks, Device for Synchronizing. R. W. Willson, New Haven, Conn.
- 2 Distance Register, Electric. E. R. E. Cowell, Detroit, Mich.
- 6 Electric Machine, Dynamo. V. W. Blanchard, New York, N.Y.
- 6 Electric Machine, Dynamo. E. J. Harling and E. Hartmann, London, England.
- 6 Electric Machine, Dynamo. P. Jablochkoff, Paris, France.
- 6 Electric Machine, Dynamo. G. A. Scheefer, Evansville, Ind.
- 3 Electrical Currents, Metallic Circuit for. S. D. Strohm, Philadelphia, Pa.
- 9 Electrical Currents, Metallic Circuit for. S. D. Strohm, Philadelphia, Pa.
- 9 Electro-Pneumatic Gate and Signal Operating Apparatus. W. Robinson, Boston, Mass.
- 15 Electro-Therapeutic Apparatus. J. W. See, Hamilton, Ohio.
- 6 Insulating Compound for Electric Wires. R. S. Waring, Pittsburg, Pa.
- 15 Insulating Material for Electric Uses. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 14 Insulating Wires for Electric Uses. Process of and Apparatus for. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 15 Lamp, Electric-Arc. C. A. Cooley, New Britain, Conn.
- 6 Magnet, Electro. V. W. Blanchard, New York, N.Y.
- 7 Secondary Battery. V. W. Blanchard, New York, N.Y.
- 7 Secondary Battery. E. T. Starr, Philadelphia, Pa.
- 2 Telegraph Railway Car (Re-issue). J. B. Finney, Pittsburg, Pa.
- 7 Telegraph, Ship. J. S. Gisborne, Charing Cross, County of Middlesex, England.
- 14 Telegraph Switch. R. Brougham, Hadden-street, Regent-street, County of Middlesex, England.
- 6 Telephone, Mechanical. H. E. Huston, Monticello, Ill.
- 6 Telephone Systems Electric Circuit for. J. W. Brennan, Chicago, Ill.
- 19 Telephone Systems, Electric Switch and Circuit for. J. W. Brennan, Chicago, Ill.
- 15 Tower for Electric Lights, &c. C. D. F. Smith, Aurora, Ill.

## NOVEMBER 14th.

- 87 Electric Cables, Machine for the Manufacture of. W. H. Sawyer, Providence, R.I.
- 45 Electric Machines, Electric Governor for Driving Engines for Dynamo. S. D. Mott, Menlo Park, N.J.
- 55 Electrotypes, Machine for Notching and Trimming. C. M. Letz, Chicago, Ill.
- 29 Galvanic Battery. A. Bernstein, Berlin, Germany.
- 67 Galvanic Battery. G. W. O'Hara, Kalamazoo, Mich.
- 15 Lamp, Electric-arc. N. McCarty, Brooklyn, N.Y.
- 14 Lamp, Electric-arc. E. Weston, Newark, N.J.
- 17 Lamp, Incandescent Electric. S. H. Emmens, London, England.
- 165 Measuring Electric Currents. S. D. Mott, Menlo Park, N.J.
- 87 Station Indicator, Electric. J. F. Loughlin, Hyde Park, Mass.
- 109 Telegraph Cable. C. J. Shafter, Grand Junction, Mich.
- 165 Telegraph Printing. G. M. Phelps, Brooklyn, N.Y.
- 87 Telephone System. T. A. Watson, Everett, Mass.
- 109 Underground Lines, Conduit for. W. B. Eltonhead, Philadelphia, Pa.
- 65 Gas Engines, Electrical Igniting Device for. A. K. Rider, Walden, N.Y.

## NOVEMBER 21st.

- 87 Annunciator, Electrical. F. Tanner, Detroit, Mich.
- 87 Burglar Alarm, Electrical. C. A. E. Ruebel, Chillicothe, Ohio.
- 55 Electric Machine Regulator, Dynamo. J. R. Finney, Pittsburg, Pa.
- 45 Electric Signaling Apparatus. H. W. Southworth, Springfield, Mass.
- 11 Electrical Apparatus, Commutator for. C. C. Peck and W. H. Chapman, Middleburg, Vt.
- 17 Electrical Switch Board. J. F. Gilliland, Indianapolis, Ind.
- 11 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 0 Pumping Apparatus, Electric. C. C. Peck, and W. H. Chapman, Middleburg, Vt.
- 3 Railway Signal Apparatus, Electric. O. Gassett, Boston, Mass.
- 9 Railway Signal Apparatus, Electric. O. Gassett, Boston, Mass.
- 0 Secondary Battery. J. R. Finney, Pittsburg, Pa.
- 4 Secondary Battery. E. F. Starr, Philadelphia, Pa.
- 8 Telegraph Key. J. T. Guthrie, Leesburg, Ohio.
- 5 Telegraph Line, Underground. C. J. Hansen, Washington, D.C.
- 3 Telegraph Sounder. J. H. Bunnell, New York, N.Y.
- 9 Telegraphic Register. E. L. Pope, Elizabeth, N.J.
- 5 Telephone Exchange, and Apparatus therefor. H. Lartigue, Paris, France.
- 7 Telephone Mechanical. H. T. Johnson, Scio, N.Y.
- 0 Telephone System. W. A. Jackson and W. R. Cole, Detroit, Mich.



## NOVEMBER 28TH.

- 268,000 Electric Cable. R. S. Waring, Pittsburg, Pa.  
 268,157 Electric Cable. R. S. Waring, Pittsburg, Pa.  
 268,158 Electric Cable, Lead Armored. R. S. Waring, Pittsburg, Pa.  
 268,069 Electric Cable, Submarine. R. S. Waring, Pittsburg, Pa.  
 268,324 Electric Cables, Dividing and Branching. R. S. Waring, Pittsburg, Pa.  
 268,159 Electric Cables, Uniting and Branching. R. S. Waring, Pittsburg, Pa.  
 268,174 Electric Generator. V. W. Blanchard, New York, N.Y.  
 268,255 Electric Machine, Dynamo. R. H. Mather, Windsor Conn.  
 268,331 Electric Machine, Dynamo. E. Weston, Newark, N.J.  
 268,205 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 268,175 Electric Storage Batteries, Apparatus for Charging. V. W. Blanchard, New York, N.Y.  
 268,081 Electric Wire Conduits, Increasing and Reducing Joint for. C. Linford, Pittsburg, Pa.  
 268,316 Electrode, Vaginal. A. W. Tipton, Jacksonville, Ill.  
 268,218 Lamp, Electric-arc. A. Graham, London, England.  
 268,224 Lamp, Electric-arc. E. J. Harling, and E. Hartman, London, England.  
 268,038 Lamp, Electric-arc. J. McLaughlin, Chicago, Ill.  
 268,254 Lamp, Electric-arc. R. H. Mather, Windsor, Conn.  
 268,155 Lamp, Electric-arc. S. F. Van Choate, New York, N.Y.  
 268,269 Lamp, Electric Incandescent. J. V. Nichols, Brooklyn, N.Y.  
 268,270 Lamp, Electric Incandescent. J. V. Nichols, Brooklyn, N.Y.  
 268,329 Lamp Holder, Incandescent. E. Weston, Newark, N.J.  
 268,330 Lamp Holder, Incandescent-electric. E. Weston, Newark, N.J.  
 268,206 Lamp, Incandescent-electric. T. A. Edison, Menlo Park, N.J.  
 268,069 Magneto-electric Machine. O. Heikel, Jersey City, N.J.  
 268,360 Secondary Battery. A. K. Eaton, Brooklyn, N.Y.  
 268,308 Secondary Battery. E. T. and E. E. Starr, Philadelphia, Pa.  
 268,237 Telegraph Printing. A. F. and F. B. Johnson, Brooklyn, N.Y.  
 268,317 Telegraphic Circuits, Condenser for. B. Thompson, Buffalo, N.Y.  
 268,294 Telephone Exchange System and Apparatus. J. H. Rogers, New York, N.Y.  
 268,045 Telephone Toll Apparatus. J. W. See, Hamilton, Ohio.  
 268,359 Telephonic Apparatus. W. J. Dudley, Boston, Mass.  
 268,034 Insulating Compounds, Manufacture of. M. Mackay, London, England.  
 268,075 Insulator, Noise Deadening. G. M. Brown, Woonsocket, R.I.

## DECEMBER 5TH.

- 268,389 Electric Wires, Carrying and Conducting. W. M. Conway, Baltimore, Md.  
 268,392 Lamp, Electric-arc. N. H. Edgerton, Philadelphia, Pa.  
 268,394 Lamp, Electric-arc. J. R. Finney, Pittsburg, Pa.  
 268,476 Railways, Travelling Contact for Electric. J. R. Finney, Pittsburg, Pa.  
 268,031 Telegraph, Underground. L. Haas, Chester, Pa.  
 268,478 Telegraph Wire. F. K. Fitch, New York, N.Y.  
 268,501 Telegraphic Repeater. J. P. Smithers, Brooklyn, N.Y.  
 268,746 Telephone Acoustic. J. K. Stebbins, Ashtabula, Ohio.  
 268,554 Telephone, Head. F. Shaw, New York, N.Y.  
 268,030 Telephone, Receiving. G. F. Dailey, Leadville, Col.  
 268,523 Valves of Steam Engines, Electric Device for Operating the Throttle. J. Nesbitt, Toronto, Ontario, Can.

## DECEMBER 12TH.

- 268,956 Electric Machine, Dynamo. E. A. Sperry, Cortland, N.Y.  
 268,980 Electric Machines, Armature for Dynamo. F. Bain, Union City, Ind.  
 269,036 Electric Machines, Armature for Dynamo. A. B. Fisher, Union City, Ind.  
 269,082 Electric Motor, for Geissler Tubes. W. J. McCollous, Aurora, Ill.  
 269,085 Electrical Conductors, Conduit for. J. K. McLaughlin, Philadelphia, Pa.  
 269,086 Electrical Conductors, Conduit for. J. K. McLaughlin, Philadelphia, Pa.  
 269,092 Electrical Locomotive. E. J. Molera, San Francisco, Cal.  
 269,132 Lamp, Electric. W. Stanley, Jr., Englewood, N.J.  
 269,850 Lamp, Electric-arc. C. M. Ball, Troy, N.Y.  
 269,151 Lamp, Electric-arc. L. G. Wooley, Mendon, Mich.  
 268,851 Lamp, Carbon Holder, Electric. C. M. Ball, Troy, N.Y.  
 269,013 Lamps, Cut-out for Electric. C. F. Coleman, and H. A. Smith, Atlanta, Ga.  
 268,796 Telegraph for Railways. W. L. Hunt, Port Hope, Ontario, Canada.  
 269,124 Telegraph Signal Box, Automatic. P. Seiler, San Francisco, Cal.  
 269,130 Telephone, Exchange, Automatic. F. H. Snell, Washington, D.C.  
 269,030 Telephone, Mechanical. C. Egan, Zanesville, Ohio.

## DECEMBER 19TH.

- 269,470 Electric Cable. W. H. Sawyer, Providence, R.I.  
 269,476 Electric Circuits, System for Utilizing Time Switches for. E. T. Starr, Philadelphia, Pa.  
 269,379 Electric Wires, Conduit for. B. Boyer, Lebanon, Pa.  
 269,328 Electrical Connecting Cord. W. H. Sawyer, Providence, R.I.  
 269,281 Electricity, Transmission of Power by. Z. T. Gramme, Paris, France.  
 269,331 Electro-magnetic Engine. A. E. Schreiber, Brooklyn, N.Y.  
 269,318 Electro-magnetic Motor. C. C. Peck, and W. H. Chapman, Middlebury, Vt.  
 269,273 Fire Alarm and Extinguisher, Electric. C. A. Evans, Upland, Pa.  
 269,239 Incandescents, Treating. M. M. M. Slatery, New York, N.Y.  
 269,417 Lamp, Electric-arc. A. G. Holcombe, Danielsonville.  
 269,433 Lamp, Electric-arc. W. S. Parker, New York, N.Y.  
 269,321 Telegraph Key. C. Prosch, New York, N.Y.  
 269,326 Telephone Repeater. J. H. Rogers, New York, N.Y.  
 269,225 Telephones, Automatic Magneto Signal for. W. Painter, Baltimore, Md.  
 269,238 Telephonic Exchange System, and Apparatus therefor. J. O. Shiras, and E. A. Eckert, Cincinnati, Ohio.

## DECEMBER 26TH.

- 269,559 Electric Current Meter. A. Bernstein, Boston, Mass.  
 269,605 Electric Machine, Dynamo. E. Thomson, New Britain, Conn.  
 269,761 Electric Machine, Dynamo. E. Weston, Newark, N.J.  
 269,805 Electric Machine Regulator, Dynamo. H. S. Maxim, Paris, France.  
 269,006 Electric Machine Regulator, Dynamo. E. Thomson, New Britain, Conn.  
 269,593 Electric Safety Apparatus for theatres, and other buildings. C. A. Mayrhofer, Vienna, Austria-Hungary.  
 269,568 Electrical Conductors, Conduit for. W. B. Eltonhead, Philadelphia, Pa.  
 269,807 Insulating Wires. L. H. McCullough, Richmond, Ind.



## A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 6 Lamp, Electric Incandescent. E. Weston, Newark, N.J.
- 7 Lamp Holder, Incandescent Electric. E. Weston, Newark, N.J.
- 8 Lamps, Apparatus for Suspending, Raising, and Lowering Electric. C. C. Jennings, Buffalo, N.Y.
- 9 Lamps, Suspending and Circuit Controlling Mechanism for Arc. E. Weston, Newark, N.J.
- 0 Medical Induction Coil, Electro. J. Kiddor, New York, N.Y.
- 1 Telegraph and Telephone Cable. J. Speicher, New York, N.Y.
- 2 Telegraph Printing. W. J. Burnside, Hilcot Court Road, Lower Norwood, County of Surrey, England.
- 3 Telegraph Transmitter, Electric. E. M. Hamilton, New York, N.Y.
- 4 Telephone, Speaking. G. A. Fitch, Oakland, N.Y.
- 5 Rheostat. E. Weston, Newark, N.J.

### JANUARY 2ND, 1883.

- 6 Time Detector, Watchman's Electric. J. E. Richards, Cedar Keys, Fla.
- 7 Time Pieces, Electric Synchronizing Apparatus for. J. Hamblet, Brooklyn, N.Y.
- 8 Vehicle, Electric. J. R. Finney, Pittsburg, Pa.
- 9 Annunciator, Oral. J. Ireland, Cleveland, Ohio.
- 0 Burglar Alarm, Electric. C. T. Jackson, New York, N.Y.
- 1 Electric Machine, Dynamo. A. Chertemps, and L. Dauden, Paris, France.
- 2 Electric Motor. W. L. Silvey, Castleton, Ind.
- 3 Electric Wire Cable. J. Mackintosh, Philadelphia, Pa.
- 4 Insulator for the Suspension of Electrical Wire Conductors. P. Higgs and W. Courtenay, New York, N.Y.
- 5 Lamp, Electric. C. A. Hussey, New York, N.Y.
- 6 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 7 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 8 Mallett, Electric. J. R. Finney, Pittsburg, Pa.
- 9 Telephone Electric. H. B. Porter, Chicago, Ill.
- 0 Telephone Transmitter and Receiver. J. H. Rogers, Washington, D.C.
- 1 Telephonic Transmitter. G. E. Shaw, Chicago, Ill.
- 2 Thermostat, Electric. T. Reeve, Brooklyn, N.Y.

### JANUARY 9TH.

- 3 Apparatus for Cooling the Armatures of Dynamo-electric Machines. Peter N. Vander Weyde, New York, N.Y.
- 4 Automatic Electric Railway. Edward N. Dickerson, Jr., and Charles G. Curtis, New York.
- 5 Coupling for Wires and Electric Conductors. Henry F. Humphrey, Fairfield, Iowa.
- 6 Device for Controlling Electrical Currents. Charles J. Van Depoele, Chicago, Ill.
- 7 Dynamo-electric Machine. Joseph Lewis, Chicago, Ill.
- 8 Dynamo-electric Machine. James McTighe and Thomas J. McTighe, Pittsburg, Pa.
- 9 Electrical Car Brake. Albert S. Parsons, Huntington W. Va.
- 0 Electrical Control for Pendulum Clocks. Robert W. Wilson, New Haven, Conn.
- 1 Electric-arc Lamp. Percy Ruskin Allen, Victoria Works, County of Surrey, England.
- 2 Electric-arc Lamp. Samuel Martin and James F. Richards, Pittsburg, Pa.
- 3 Electric Cable. William W. Jacques, Boston, Mass.
- 4 Electric Light. Henry A. Seymour, Washington, D. C.
- 5 Magneto-electric Machine. Adam Millar, Glasgow, Scotland.
- 6 Portable Voltaic Battery. James Makenzie, County of Middlesex, England.
- 7 Railroad Signal. Joshua Gray, Medford, Mass.
- 8 Telephonic Circuit. J. Milton, Stearns, Jr., Brooklyn, N.Y.
- 9 Telephone Exchange System. Charles A. Randall, New York, N.Y.
- 0 Telephone Switch. Thomas J. McTighe, Pittsburg, Pa.
- 1 Telephone Switch. Thomas A. Watson, Everett, Mass.

### JANUARY 16TH.

- 2 Clock, Electric Alarm. J. I. Conklin, Jr., New York, N.Y.
- 3 Electric Battery, Secondary. W. K. Freeman, Brooklyn, N.Y.
- 4 Electric Lighting for Railway Trains, System of. C. E. Buell, New Haven, Conn.
- 5 Electric Machine, Dynamo. W. P. Freeman, New York, N.Y.
- 6 Electric Machine, Dynamo. W. P. Freeman, New York, N.Y.
- 7 Electric Machines, Armature for Dynamo. W. P. Freeman, New York, N.Y.
- 8 Electric Machines or Electric Motors, Armature for Dynamo. W. K. Freeman, Brooklyn, N.Y.
- 9 Electric Storage and Supply, System of. C. E. Buell, New Haven, Conn.
- 0 Galvanic Battery. G. Scrivanow, Paris, France.
- 1 Lamp, Electric. W. F. Jobbins, East Orange, N.J.
- 2 Lamp, Electric-arc. G. W. Beardslee, Brooklyn, N.Y.
- 3 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 4 Railway Signaling, Electric Circuit for. G. Westinghouse, Jr., Pittsburg, Pa.
- 5 Telegraph Key. E. A. Edwards, Cincinnati, Ohio.
- 6 Telegraph Key. W. D. Farren, Boise City, Idaho.
- 7 Telegraph, Mechanical Speaking. A. M. Rosebrugh, Toronto, Ontario, Canada.
- 8 Telegraphs, Perforator for Automatic. T. M. Foote, Brooklyn, N.Y.
- 9 Telegraph Apparatus. W. L. Hunt, Port Hope, Ontario, Canada.
- 0 Telegraphy. T. M. Foote, New York, N.Y.
- 1 Telephone Transmitter. W. A. Crawford, San Antonio, Texas.

### JANUARY 23RD.

- 3 Electric Battery, Fluid. E. Berliner, Boston, Mass.
- 4 Electric Induction Machine. A. G. Waterhouse, New York, N.Y.
- 5 Electric Light. E. Weston, Newark, N.J.
- 6 Electric Light and Gas Burner, Combined. W. A. Shaw, Brooklyn, N.Y.
- 7 Electric Motor. S. S. Wheeler, C. G. Curtis, and F. B. Crocker, New York, N.Y.
- 8 Lamp, Electric-arc. C. P. Jürgensen, Copenhagen, Denmark.
- 9 Lamp, Electric-arc. E. Weston, Newark, N.J.
- 0 Lamp, Incandescent, Electric. E. Weston, Newark, N.J.
- 1 Lamp, Magazine, Electric. A. T. Gifford, Providence, R.I.
- 2 Telegraphs, Optical Attachment for Printing. W. J. McCausland, Philadelphia, Pa.
- 3 Telegraphy, Multiplex. C. Seldon, Toledo, Ohio.
- 4 Telephone Receiver. S. H. Bartlett, and H. E. Waite, New York, N.Y.

### JANUARY 30TH.

- 7 Electric Circuits, Device for Making and Breaking. R. W. Wilson, New Haven, Conn.
- 8 Electric Motor. A. Miller, Glasgow, Scotland.
- 9 Galvanic Battery. J. A. Barrett, Chicago, Ill.
- 0 Lamp, Electric-arc. E. H. Ames, La Grange, Ill.
- 1 Lamp, Electric-arc. J. R. Finney, Pittsburg, Pa.
- 2 Lamp, Electric-arc. W. Hochhausen, New York, N.Y.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

- 271,458 Lamp, Electric-arc. W. Hochhausen, New York, N.Y.
- 271,921 Lamp, Incandescent Electric. A. Bernstein, Boston, Mass.
- 271,457 Lamps, Automatic Cut-out for Electric. W. Hochhausen, New York, N.Y.
- 271,548 Telegraph Cable, Submarine. S. Trott and F. A. Hamilton, Halifax, Nova Scotia, Canada.
- 271,262 Telegraph Cable Pipe. W. R. Patterson, Chicago, Ill.
- 271,279 Telephone Exchanges, Circuit for Multiple Switch Boards for. C. E. Scribner, Chicago, Ill.
- 271,324 Telephone, Mechanical. G. K. and H. C. Farrington, Kirksville, Mo.
- 271,513 Telephone System and Apparatus. C. A. Randall, New York, N.Y.
- 271,280 Telephones, Secrecy Switch for. C. E. Scribner, Chicago, Ill.

## FEBRUARY 6TH.

- 271,707 Annunciator and Fire Alarm, Electric Hotel. A. T. Hess, Des Moines, Iowa.
- 271,721 Brake Setting Apparatus, Electric. J. B. Low, Pulaski, N.Y.
- 271,582 Car Signal, Electro-magnetic. J. W. Marley, Chicago, Ill.
- 271,825 Electric Circuit Wires, Fastening for. H. G. Fiske, Springfield, Mass.
- 271,948 Electric Current Regulator. E. Thomson, New Britain, Conn.
- 271,972 Electric Machine, Dynamo. W. Baxter, Jr., Jersey City, N.J.
- 271,979 Electric Machine, Dynamo and Magneto. E. Gordon, New York, N.Y.
- 271,928 Electric Machine, Dynamo and Magneto. C. A. Seeley, New York, N.Y.
- 271,615 Electric Machine Governor, Dynamo. T. A. Edison, Menlo Park, N.J.
- 271,616 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.
- 271,654 Electric Machine Regulator, Dynamo. J. F. Ott, Newark, N.J.
- 271,947 Electric Machines, Commutator for Dynamo. E. Thomson, New Britain, Conn.
- 271,913 Electric Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 271,832 Electrical Conductor. P. G. Gardner, Jr., J. W. Le Roy, and G. K. Tinker, North Adams, Mass.
- 271,914 Electrical Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 271,805 Gas Lighting Burner, Electric. C. H. Crockett, Boston, Mass.
- 272,004 Gas Lighting Burner, Electric. H. J. Warren, West Bridgewater, Mass.
- 271,991 Incubators, Electric Regulator and Alarm for. F. Rosebrook, Elmira, N.Y.
- 271,994 Insulator, Electrical. D. M. Steward, Cincinnati, Ohio.
- 271,816 Lamp, Electric-arc. W. L. Dudley, Covington, Ky., C. F. Rapp, Cincinnati, Ohio.
- 271,613 Lamps, Manufacture of Incandescing Electric. T. A. Edison, Menlo Park, N.J.
- 271,733 Lightning Rods, Tripod Standard for. T. H. Patee, and T. D. Ridge, Greencastle, Ind.
- 271,904 Mail Conveyor, Electric. E. Nicolaisen, New York, N.Y.
- 271,628 Secondary Battery. A. Haid, Rahway, N.J.
- 271,958 Telegraph, Railway Train. W. T. Waters, Atlanta, Ga.
- 271,507 Telegraphs, Station Switch for Fire. G. F. Bule, Jersey City, N.J.
- 271,508 Telegraphic Fire Alarm Stations, Automatic Testing Apparatus for. G. F. Bule, Jersey City, N.J.
- 271,878 Telephone. C. T. Loring, and G. W. Pierce, Boston, Mass.
- 271,610 Telephone Receivers, Circuit Closer for. E. C. Dean, Washington, D.C.
- 271,924 Telephone Transmitter. E. A. Schoettel, Brooklyn, N.Y.
- 271,903 Telephone Transmitters, Mouthpiece for. A. S. Nichols, New Haven, Conn.
- 271,750 Wire, Manufacture of Covered or Insulated. J. D. Thomas, New York, N.Y.

## FEBRUARY 13TH.

- 272,100 Clock, Electric. D. F. Sweet, Hastings, Mich.
- 272,256 Electric Machine Dynamo. E. J. Houston, Philadelphia, Pa.
- 272,366 Electric Machine Dynamo. E. Weston, Newark, N.J.
- 272,365 Electric Transmission of Power, System for the. E. Weston, Newark, N.J.
- 272,221 Electric Wires, Underground Conduit for. J. S. Du Bois, Camden, N.J.
- 272,362 Electrical Transmission of Power, Device for Regulating the. E. Weston, Newark, N.J.
- 272,363 Electrical Transmission of Power, Device for Regulating the. E. Weston, Newark, N.J.
- 272,364 Electrical Transmission of Power, Device for Regulating the. E. Weston, Newark, N.J.
- 272,353 Electro-magnetic Retarding Device. E. Thomson, New Britain, Conn.
- 272,169 Electrolier, Extension. L. Stieringer, New York, N.Y.
- 272,187 Gas Generator, Electric. C. E. Ball, Philadelphia, Pa.
- 272,089 Insulator for Electric Conductors. T. Mace, Plainfield, N.J.
- 272,262 Lamp, Electric-arc. N. S. Keith, New York, N.Y.
- 272,367 Lamp, Electric-arc. E. Weston, Newark, N.J.
- 272,125 Lamp, Electric Incandescent. P. Diehl, Elizabeth, N.J.
- 272,017 Lamps, Carbon Electrode for Electric. J. E. Atwood, Troy, N.Y.
- 272,234 Magneto-electric Generators, Automatic Shunt for. E. T. Gilliland, Indianapolis, Ind.
- 271,142 Railway Signal, Electric. W. W. Le Grande, Louisville, Ky.
- 272,276 Railway Signal, Electric. W. W. Le Grande, Louisville, Ky.
- 272,210 Telegraphic Relay. T. Cochran, Brooklyn, N.Y.
- 272,034 Telephone. T. A. Edison, Menlo Park, N.J.
- 272,329 Telephone, Electric Speaking. A. W. Rose, and C. A. Cheever, New York, N.Y.

## FEBRUARY 20TH.

- 272,811 Electric-arc Light. J. A. Wetmore, Concord, Mich.
- 272,441 Electric Underground Conductor. R. M. Hunter, Philadelphia, Pa.
- 272,833 Electric Wires, System of Laying Subterranean Lines of. J. T. Goodfellow, Philadelphia, Pa.
- 272,792 Electrical Currents, Metallic Circuit for. S. D. Strohm, Philadelphia, Pa.
- 272,799 Electro-magnetic Regulator. R. H. Tucker, East Orange, N.J.
- 272,659 Insulated Electric Conductor. A. A. Cowles, New York, N.Y.
- 272,660 Insulated Electric Conductor. A. A. Cowles, New York, N.Y.
- 272,464 Railway Signal, Electric. E. L. Orent, Somerville, Mass.
- 272,830 Railway Signal and Switch System; Electric Interlocking. J. K. Knight, New York, N.Y.; and W. H. Brooklyn, N.Y.
- 272,724 Ships and the Rate of Currents, Electric Log or Apparatus for Ascertaining the Speed of. R. M. Low End, Finchley, County of Middlesex, England.
- 272,774 Telegraph Cable. N. M. Rittenhouse, Baltimore, Md.
- 272,524 Telegraph Wire Coupling. G. Brott, Waterford, N.Y.
- 272,645 Telegraphs, Signaling Apparatus for District and Fire Alarm. T. A. Casey, New York, N.Y.
- 272,506 Telephone Exchanges, Alarm Signal Apparatus for. E. A. Woolk, Springfield Mo.

## MARCH 6TH.

- 273,565 Car Brake, Electric. D. J. Macpherson, Sioux Falls, Dakota.
- 273,634 Clock, Electric. D. F. Sweet, Hastings, Mich.
- 273,622 Door Opener, Electrical. A. T. Smith, New York, N.Y.
- 273,291 Electric Force, Apparatus for Regulating the Transmission of. M. Levy, Paris, France.
- 273,487 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.
- 273,488 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.
- 273,406 Electric Machines, Air Blast Attachment for Commutators of Dynamo. E. Thomson, New Britain, Conn.
- 273,259 Electric Wires, Binding Screw for. E. C. Coolidge, Boston, Mass.

# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 5 Electric Wires, Underground Conduit for. W. Plankinton, Milwaukee, Wis.
- 6 Electrical Conductor Coupling. P. R. Allen, Southwark, County of Surrey, England.
- 7 Electrical Generator Engines, Valve Gear for. T. A. Edison, Menlo Park, N.J.
- 1 Electrical Generators, Regulator for Driving Engines of. T. A. Edison, Menlo Park, N.J.
- 2 Electrical Transmission of Power, Controlling the. E. Weston, Newark, N.J.
- 3 Electrode for Secondary Batteries. W. S. Platt, Waterbury, Conn.
- 4 Insulated Electrical Conductor. W. R. Patterson, Chicago, Ill.
- 5 Insulating Substances, Filing Telegraph Cables with. W. R. Paterson, Chicago, Ill.
- 6 Lamp, Electric-arc. G. D. Allen, Brooklyn, N.Y.
- 7 Lamp, Incandescent Electric. H. Lea, Birmingham, County of Warwick, England.
- 8 Lamp, Incandescent Electric. T. A. Edison, Menlo Park, N.J.
- 9 Lamp, Incandescent Electric. T. A. Edison, Menlo Park, N.J.
- 10 Lamp, Incandescent Electric. J. S. Kelso, Jr., Stamford, Conn.
- 11 Railway, Electrical. T. A. Edison, Menlo Park, N.J.
- 7 Railway Signal, Electric. C. J. Means, Boston, Mass.
- 9 Railway System, Electro-magnetic. T. A. Edison, Menlo Park, N.J.
- 10 Railway Turn-table, Electric. T. A. Edison, Menlo Park, N.J.
- 2 Secondary Battery. T. A. Edison, Menlo Park, N.J.
- 4 Telegraph, Fire and District. T. D. Lockwood, Malden, Mass.
- 4 Telegraph Sounder. W. E. Davis, Jersey City, N.J.
- 5 Visual Indicator, Electrical. J. W. Mackenzie, New York, N.Y.

## MARCH 13TH.

- 5 Car Brake, Electro-magnetic. H. S. Park, Henderson, Ky.
- 5 Electric Battery. P. Jablockhoff, Paris, France.
- 4 Electric Testing Apparatus. C. J. H. Woodbury, Lynn, Mass.
- 9 Electrical Conductors, Junction Box and Connection for. J. Kruesi, Brooklyn, N.Y.
- 5 Electrical Distribution, System of Underground Conductors for. T. A. Edison, Menlo Park, N.J.
- 7 Fence and Telegraph Post, Iron. L. Petrequin, Detroit, Mich.
- 1 Galvanic Battery. L. D. McIntosh, Chicago, Ill.
- 1 Lamp, Electric-arc. L. Piette and F. Krizik, Pilsen, Austria-Hungary.
- 4 Lamp, Incandescent Electric. A. Bernstein, Boston, Mass.
- 4 Magneto-electric Signaling Apparatus. T. A. Edison, Menlo Park, N.J.
- 2 Secondary Battery. C. F. Brush, Cleveland, Ohio.
- 2 Secondary Battery. N. S. Keith, New York, N.Y.
- 9 Telegraph Printing. W. J. Burnside, Hilcot Court Road, Lower Norwood, County of Surrey, England.
- 9 Telegraphic Receiving Instrument. E. M. Hamilton, New York, N.Y.
- 5 Telephone Transmitter. R. D. Woodworth, Orange, N.J.

## MARCH 20TH.

- 5 Clock, Electric. V. Himmer, New York, N.Y.
- 5 Clock Escapement, Electric. A. W. Gray, New York, N.Y.
- 5 Clocks, Circuit Controller for Electric. V. Himmer, New York, N.Y.
- 4 Clocks, Circuit Controller for Electric. V. Himmer, New York, N.Y.
- 1 Electric Current Regulator. C. G. Perkins, Camden, N.J.
- 0 Electric Currents, Cut-out for Dangerous. F. A. Swan, and C. B. Bosworth, Boston, Mass.
- 1 Electric Cut-out. F. A. Swan, and C. B. Bosworth, Boston, Mass.
- 1 Electric Motor. J. B. Atwater, Chicago, Ill.
- 12 Electrical Conductors, Underground Conduit for. H. R. Meyer, Liverpool, County of Lancashire, England.
- 10 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 10 Galvanic Batteries, Circle Switch for. H. Lowe, Brooklyn, N.Y.
- 10 Galvanic Battery. P. De Lalande, Paris, France; and G. Chaperon, Mines, D'Alesno, Spain.
- 11 Gas for Electric Lights, Apparatus for Substituting. P. B. Delany, New York, N.Y.
- 12 Incandescents, Manufacture of. T. A. Edison, Menlo Park, N.J.
- 12 Lamp Cut-out, Electric. J. H. Elfering, Chicago, Ill.
- 12 Lamp, Electric. T. A. Edison, Menlo Park, N.J.
- 12 Lamp, Electric-arc. C. G. Perkins, Camden, N.J.
- 12 Lamp, Electric-arc. E. Thomson, New Britain, Conn.
- 12 Lamp Holder, Incandescent. E. Weston, Newark, N.J.
- 12 Lamp, Incandescent Electric. T. A. Edison Menlo Park, N.J.
- 12 Lamp, Incandescent Electric. T. A. Edison Menlo Park, N.J.
- 12 Telegraph and Semaphore Signal. W. W. McLellan, Newcastle, New Brunswick, Canada.
- 12 Telegraph Apparatus. G. D'Ingreville, New York, N.Y.
- 12 Telegraph Printing. S. D. Field, New York, N.Y.
- 12 Telegraph Printing. H. Van Hovenbergh, Elizabeth, N.J.
- 12 Telegraphy, Dynamo. H. Van Hovenbergh, Elizabeth, N.J.
- 12 Telephone, Receiving. J. A. Maloney, Washington, D.C.
- 12 Telephone Transmitter, Electric. J. A. Maloney, Washington, D.C.
- 12 Telephonic Transmitter. C. Ader, Paris, France.

## MARCH 27TH.

- 1273 Bell, Electric. C. F. De Redon, Paris, France.
- 1274 Cables or Conductors, Suspending. C. E. Chinnock, Brooklyn, N.Y.
- 1275 Electric Generator. S. J. Wallace, Kookuk, Iowa.
- 1281 Electric Wires, Conduit for. W. H. Johnstone, Philadelphia, Pa.
- 1280 Electrical Conductor. G. F. Barker, Philadelphia, Pa.
- 1285 Insulated Wire for Electrical Purposes. T. H. Thompson, Waterbury Conn.
- 1282 Insulating Compound for Electrical Wires. J. F. Martin, Chicago, Ill.
- 1281 Insulator, Electric Wire. W. H. Reiff, Philadelphia, Pa.
- 1280 Lamp Bracket, Incandescent (Re-issue). E. Weston, Newark, N.J.
- 1244 Lamp, Electric-arc. J. Du Shane, South Bend, Ind.
- 1264 Lamp, Incandescent Electric. C. G. Perkins, Camden, N.J.
- 1283 Lamp, Switch, Incandescent Electric. C. G. Perkins, Camden, N.J.
- 1264 Lightning Conductor. J. H. Coon, Des Moines, Iowa.
- 1292 Secondary Battery. A. J. Martin, Catskill, N.Y.
- 1270 Telegraph or Telephone Lines, Conduit for. S. Brentano, New York, N.Y.
- 1285 Telegraph, Printing. G. B. Scott, Brooklyn, N.Y.
- 1243 Telegraph, Printing. S. D. Field, New York, N.Y.
- 1282 Telegraph Wire Conduit, Underground. A. Sloan, Newark, N.J.
- 1283 Telegraphy Apparatus, Electric. P. E. Derez, New York, N.Y.
- 1277 Telephone. T. A. Edison, Menlo Park, N.J.
- 1288 Telephone Call Circuits, Pole Changer for. E. E. Bawsel, Washington, D.C.
- 1292 Telephone Exchange Circuit. A. S. Hibbard, Milwaukee, Wis.
- 1287 Telephone Exchange Signaling Circuit and Apparatus. T. N. Vail, Boston, Mass.
- 1276 Telephone, Transmitting. T. A. Edison, Menlo Park, N. J.



## APRIL 3RD.

- 274,904 Carbon Rod or Stick, and mechanism for making the same. C. F. Brush, Cleveland, Ohio.  
 275,179 Electric Elevator. S. D. Field, New York, N.Y.  
 275,289 Electric Light Circuits, Safety Self-closing Shunt Switch for. E. Thomson, New Britain, Conn.  
 275,290 Electric Light Circuits, Safety Self-closing Shunt Switch for. E. Thomson, New Britain, Conn.  
 275,169 Electric Machines, Armature for Dynamo. E. A. Edwards, Cincinnati, Ohio.  
 275,006 Electric Signaling Apparatus, Automatic. F. B. Wood, New York, N.Y.  
 275,023 Electric Wires, Underground Conduit for. H. Clay, Philadelphia, Pa.  
 274,916 Lamp, Electric-arc. J. E. Dalzell, New York, N.Y.  
 275,168 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,170 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,171 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,172 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,173 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,174 Lamp, Electric-arc. E. A. Edwards, Cincinnati, Ohio.  
 275,182 Lamp, Electric-arc. J. R. Finney, Pittsburg, Pa.  
 275,183 Lamp, Electric-arc. J. R. Finney, Pittsburg, Pa.  
 274,967 Lamp, Electric-arc. S. F. Van Choate, New York, N.Y.  
 274,969 Lamp, Electric-arc. F. G. Waterhouse, Sacramento, Cal.  
 274,959 Lamp Globe, Electric. G. J. Murdock, Binghamton, N.Y.  
 275,237 Magneto-electric Machine. S. Marcus, Vienna, Austria-Hungary.  
 275,255 Railway Signal, Electric. H. C. Nicholas, Mount Washington, Ohio.  
 275,180 Railway Track Circuits, Electrical Connector for. S. D. Field, New York, N.Y.  
 274,905 Secondary Battery Element. C. F. Brush, Cleveland, Ohio.  
 275,339 Telegraph, Automatic Printing. A. F. & F. B. Johnson, Brooklyn, N.Y.  
 275,334 Telegraph, Duplex. J. E. Fenn, Elizabeth, N.J.  
 275,185 Telegraphs, Polarized Relay for Quadruplex. G. W. Gardanier, Brooklyn, N.Y.  
 275,195 Telegraphic Conductors, Supporting and Preserving. J. H. Green, Brooklyn, N.Y.  
 275,181 Telegraphy, Receiving Instrument for Quadruplex. S. D. Field, New York, N.Y.  
 275,178 Telephone, Speaking. S. D. Field, New York, N.Y.  
 275,310 Telephone Transmitter. E. L. Wilson, Boston, Mass.  
 275,296 Telephone Circuits, Automatic Signaling Apparatus for. T. N. Vail, Boston, Mass.

## APRIL 10TH.

- 275,510 Electric-arc Light. G. J. Murdock, Binghamton, N.Y.  
 275,407 Electric Cable. W. J. Philips, and G. L. Kitson, Philadelphia, Pa.  
 275,424 Electric Cable. S. F. Shelbourne, New York, N.Y.  
 275,425 Electric Cable, Subterranean. S. F. Shelbourne, New York, N.Y.  
 275,408 Electric Cables, Machine for Manufacturing. W. J. Philips, and G. L. Kitson, Philadelphia, Pa.  
 275,748 Electric Conductor, Flexible. S. Bergmann, New York, N.Y.  
 275,749 Electric Light Fixtures, Connection for. S. Bergmann, New York, N.Y.  
 275,440 Electric Light Switch. T. G. Turner, New York, N.Y.  
 275,392 Electric Machine, Dynamo. V. E. Keegan, Boston, Mass.  
 275,549 Electric Machine, Dynamo. C. J. Van Depoele, Chicago, Ill.  
 275,600 Electric Signaling Apparatus. C. Cummings, Virginia City, Nevada.  
 275,776 Electrical Conductor, Underground. J. Kruesi, Brooklyn, N.Y.  
 275,347 Electrical Machine, Frictional. P. Atkinson, Chicago, Ill.  
 275,339 Electrical Wire Conduit. J. F. Martin, Chicago, Ill.  
 275,752 Fire Extinguisher and Alarm. C. E. Buell, New Haven, Conn.  
 275,422 Insulating Compound for Electric Conductors. S. F. Shelbourne, New York, N.Y.  
 275,423 Insulating Subterranean Electric Cables, Mold for. S. F. Shelbourne, New York, N.Y.  
 275,345 Lamp, Electric-arc. J. B. Allen, Springfield, Ill.  
 275,613 Lamp, Incandescing Electric. T. A. Edison, Menlo Park, N.J.  
 275,612 Lamps, Manufacture of Incandescing. T. A. Edison, Menlo Park, N.J.  
 275,730 Lamps, &c., Molding Bulbs for Incandescing Electric. A. Swan, Gateshead, County of Durham, England.  
 275,433 Telegraph Key. E. G. Stevens, Cleveland, Ohio.  
 275,362 Telephone Exchange Switch. G. W. Coy, Milford, Conn.  
 275,420 Telephones, Head-gear for Switchmen's. C. E. Scribner, Chicago, Ill.  
 275,611 Telephonic Transmitters. Adjustable Support for. W. H. Eckert, J. A. Seeley, and E. A. Eckert, Cincinnati, Ohio.  
 275,387 Underground Conductor. R. M. Hunter, Philadelphia, Pa.

## APRIL 17TH.

- 276,133 Electric Light, Incandescent. T. L. Clingman, Asheville, N.C.  
 276,003 Electric Machine, Dynamo. W. Morava, Chicago, Ill.  
 275,842 Electric Motors, Speed Regulator and Reversing Device for. E. Molera, R. and J. C. Cebrian, San Francisco, Cal.  
 275,797 Galvanic Battery. W. A. Alexander, Mobile, Ala.  
 275,845 Galvanic Battery. J. B. Odell, Chicago, Ill.  
 276,138 Interlocking Switch and Signal, Electric. O. Gassett, and I. Fisher, Boston, Mass.  
 276,038 Railway Signal, Electric. S. C. Hendrickson, Brooklyn, N.Y.  
 276,021 Railway Signal, Electro-pneumatic. O. Gassett, Boston, Mass.  
 275,879 Railway Trains, Electric Signaling Apparatus for. G. M. Bedinger, Jr. Erlanger, Ky.  
 275,985 Secondary Battery. C. F. Brush, Cleveland, Ohio.  
 275,986 Secondary Battery. C. F. Brush, Cleveland, Ohio.  
 276,039 Storage or Secondary Battery. C. J. Van Depoele, Chicago, Ill.  
 275,859 Telegraph Cables. Apparatus for Covering. J. Robertson, Brooklyn, N.Y.  
 276,087 Telegraphic Relay. J. P. Smithers, Brooklyn, N.Y.  
 276,136 Telephone Lines. Electric Signaling Apparatus for. D. Drawbaugh, Eberly's Mill, Pa.  
 276,137 Telephone Transmitter. D. Drawbaugh, Eberly's Mill, Pa.

## APRIL 24TH.

- 276,216 Electric Circuit Switch Board. F. Blake, Weston, Mass.  
 276,328 Electric Cut-out. E. M. Avery, Cleveland, O.  
 276,296 Electric Cut-out. T. H. Rhodes, Brooklyn, N.Y.  
 276,275 Electric Generator, Dynamo. C. C. Peck, and W. H. Chapman, Middlebury, Vt.  
 276,194 Electric Machine, Dynamo. H. Roberts, Pittsburg, Pa.  
 276,190 Electric Wire Conduit. J. A. Mehaffey, Parnassus, Pa.  
 276,486 Electric Wires, Laying Underground. C. D. Shrieves, and J. E. Cook, Philadelphia, Pa.  
 276,233 Electrical Generator and Motor. T. A. Edison, Menlo Park, N.J.  
 276,232 Electrical Generators, Operating and Regulating. T. A. Edison, Menlo Park, N.J.  
 276,263 Electrical Switch Board. C. W. McLean, Newberne.  
 276,285 Gas by Electricity, Push-bottom and Circuit for Lighting. T. H. Rhodes, New York, N.Y.  
 276,330 Magneto and Dynamo-electric Machines. A. I. Gravier, Paris, France.  
 276,274 Magneto-electric Generator. C. C. Peck, and W. H. Chapman, Middlebury, Vt.



# FA. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 125 Secondary Battery. C. F. Brush, Cleveland, Ohio.
- 126 Secondary Battery Element. C. F. Brush, Cleveland, Ohio.
- 127 Secondary or Storage Battery. E. T. and E. E. Starr, Philadelphia, Pa.
- 128 Secondary or Storage Battery. E. T. and E. E. Starr, Philadelphia, Pa.
- 129 Telegraph Line, Underground. N. M. Rittenhouse, and M. W. Locke, Baltimore, Md.
- 130 Telephone and Telegraph Switches, Electric Time Register for. F. E. Kinsman, New York, N.Y.
- 131 Telephone Call Indicator. J. M. Provost, Buffalo, N.Y.

## MAY 1ST.

- 132 Annunciator, Telephonic. G. L. Weaver, Boston, Mass.
- 133 Electric Call. J. B. Currier, and D. H. Rice, Lowell, Mass.
- 134 Electric Machines, Armature for Dynamo. L. Daft, Greenville, N.J.
- 135 Electric Way. E. M. Bentley, Washington, D.C.
- 136 Electric Way. E. M. Bentley, Washington, D.C.
- 137 Electric Way. E. M. Bentley, and W. H. Knight, Washington, D.C.
- 138 Electric Way. W. H. Knight, and E. M. Bentley, Washington, D.C.
- 139 Electrical Conductor. T. S. Reed, Bridgeport, Conn.
- 140 Electrical Purposes, Covering Wire for. J. J. C. Smith, College Point, N.Y.
- 141 Electrical Purposes, Machine for Covering Wire for. J. J. C. Smith, College Point, N.Y.
- 142 Heating Apparatus, Electrical. A. Lieberman, and W. Robb, Philadelphia, Pa.
- 143 Insulating Electrical Conductors. J. G. Sanderson, Scranton, Pa.
- 144 Insulating Conductors and a New Compound, suitable to be used for this and other purposes. W. Smith, Wharf Road, City Road, County of Middlesex, England.
- 145 Insulator for Telegraph Wires. J. S. Lewis, Birkenhead. County of Chester England.
- 146 Lamp, Electric-arc. L. Daft, Greenville, N.J.
- 147 Lamp, Electric-arc. L. Daft, Greenville, N.J.
- 148 Lamp, Electric-arc. L. Daft, Greenville, N.J.
- 149 Lamp, Incandescent Electric. P. Diehl, Elizabeth, N.J.
- 150 Lamp, Voltaic-arc. O. A. Moses, New York, N.Y.
- 151 Lamp, Voltaic-arc. O. A. Moses, New York, N.Y.
- 152 Lamp, Voltaic-arc. O. A. Moses, New York, N.Y.
- 153 Lamp, Glass Bulb or Globe for Incandescent Electric. A. Swan, Gateshead, County of Durham, England.
- 154 Railway, Electric. L. Daft, Greenville, N.J.
- 155 Railway Signal, Electric. A. W. Hall, Meriden, Conn.
- 156 Secondary Battery Plate. C. H. Koyl, Baltimore, Md.
- 157 Telephone Call, Individual. J. A. Lakin, Westfield, Mass.
- 158 Telephone, Electric. J. H. Robertson, New York, N.Y.
- 159 Telephone, Electric. J. H. Robertson, New York, N.Y.
- 160 Telephone Receiver. G. E. Shaw, Chicago, Ill.
- 161 Telephone Transmitter, Electric. J. H. Robertson, Brooklyn, N.Y.
- 162 Voltaic-arc Light. O. A. Moses, New York, N.Y.

## MAY 8TH.

- 163 Annunciator and Communicating Apparatus, Electric. W. Humans, Cambridgeport, Mass.
- 164 Burglar Alarm, Ringing. A. W. Lawson, Midway, Ala.
- 165 Clock Winding Device, Electric. G. F. Ballou, Waltham, Mass.
- 166 Electric Conductor or Cable, Underground. J. B. Hyde, New York, N.Y.
- 167 Electric Conductors, Manufacture of Silicious Copper and Bronze for making. L. Weiller, Angoulême, Charente, France.
- 168 Electric Divining Rod. C. F. Varley, Bexley Heath, County of Kent, England.
- 169 Electric Machine, Dynamo. J. A. I. Craig, Montreal, Quebec, Canada.
- 170 Electric Machine, Dynamo. J. A. I. Craig, Montreal, Quebec, Canada.
- 171 Electric Machines, Armature for Dynamo. L. Daft, Greenville, N.J.
- 172 Electrical Conductor. S. D. Stroh, Philadelphia, Pa.
- 173 Fire Alarm Box, Electric. B. Frese, Chicago, Ill.
- 174 Gas by Electricity, Device for Lighting. J. B. Odell, Chicago, Ill.
- 175 Insulated Conductor of Electricity, Electro-plated. N. H. Edgerton, Philadelphia, Pa.
- 176 Insulated Electrical Conductor. W. Smith, Wharf Road, City Road, County of Middlesex, England.
- 177 Lamp, Electric-arc. A. Shedlock, Brooklyn, N.Y.
- 178 Lamp, Electric-arc. A. Shedlock, Brooklyn, N.Y.
- 179 Lamp Holder, Electric. A. Shedlock, Brooklyn, N.Y.
- 180 Lamp Hood, Electric. S. H. Tacy, New York, N.Y.
- 181 Magneto-electric Machine. C. A. Seeley, New York, N.Y.
- 182 Railway Signals, Circuit Instrument for Electric. J. Weis, Jersey City, N.J.
- 183 Railway Trains, Electric Signaling Apparatus for. F. A. Shaw and H. E. Judkins, Portland, Me.
- 184 Speed Indicator, Magnetic. E. Weston, Newark, N.J.
- 185 Telegraph, Automatic. J. H. Rogers, Washington, D.C.
- 186 Telegraph Cable, Splice. W. R. Patterson, Chicago, Ill.
- 187 Telegraph Line, Underground. W. Cohlman, Philadelphia, Pa.
- 188 Telephone. H. Clay, Philadelphia, Pa.
- 189 Telephone, Receiving. M. L. Baxter, Aurora, Ill.
- 190 Telephone, Receiving. M. L. Baxter, Aurora, Ill.
- 191 Telephonic and other Electrical Purposes, Line Changer for. C. H. Lothrop, Lyons, Iowa.
- 192 Thermostat. W. G. Day, Baltimore, Md.

## MAY 15TH.

- 193 Burglar Alarm, Ringing. T. E. James, Rochester, N.Y.
- 194 Circuit Controller Device. E. Weston, Newark, N.J.
- 195 Electric Cable Support. A. Wright, Providence, R.I.
- 196 Electric Lock. M. Sullivan, Brooklyn, N.Y.
- 197 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 198 Electric Wires, Laying Underground. J. Marks, Newark, N.J.
- 199 Electro-magnetic Engine. G. W. Foster, New York, N.Y.
- 200 Gas Lighting, Electric. T. H. Rhodes, Brooklyn, N.Y.
- 201 Head Light for Locomotives, etc., Electric. F. Ball, Jr., Cincinnati, Ohio.
- 202 Insulating Wires for Electric Purposes. J. J. C. Smith, College Point, N.Y.
- 203 Lamp and Holder, Electric. E. Weston, Newark, N.J.
- 204 Lamp and Holder therefor, Electric. E. Weston, Newark, N.J.
- 205 Lamp Bracket, Electric Incandescent. E. Weston, Newark, N.J.
- 206 Lamp Bracket, Electric Incandescent. E. Weston, Newark, N.J.
- 207 Lamp Carbons, Manufacturing Incandescent. H. B. Maxin, Paris, France.
- 208 Lamp Fixture, Electric. E. Weston, Newark, N.J.
- 209 Measuring and Recording Electric Currents, Apparatus for. J. Hopkinson, Westminster Chambers, County of Middlesex, England.
- 210 Railway Signal, Telegraphic. R. M. Hunter, Philadelphia, Pa.
- 211 Secondary Battery. E. Boettcher, Leipsic, Germany.

## MAY 22ND.

- 278,150 Clock System, Electric Pneumatic. C. A. Mayerhofer, Paris, France.  
 278,277 Electric Cables, Device for Suspending. H. C. Root and J. C. Reilly, Philadelphia, Pa.  
 278,076 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.  
 278,119 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 278,120 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 278,121 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 278,122 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 278,233 Electric Wire Duct. J. C. Goodridge, Jr., New York, N.Y.  
 278,000 Electric Wire, Machine for Covering. W. Halkyard, Providence, R.I.  
 278,095 Electric Wires, Curbstone and Sidewalk Conduit for. E. Clark, Jersey City, N.J.  
 278,289 Electrical Conductor. S. D. Strohm, Philadelphia, Pa.  
 277,965 Fire Alarms, Automatic Circuit Closer for Electric. J. O. Wells, Des Moines, Iowa.  
 278,087 Insulating Underground Electric Wires. W. M. Brisben, Philadelphia, Pa.  
 278,293 Lamp, Electric-arc. W. M. Thomas, Cincinnati, Ohio.  
 278,304 Lamp Regulator, Electric-arc. A. I. Gravier, Paris, France.  
 278,028 Lightning Rod. A. C. Lobdell, Chicago, Ill.  
 278,026 Telephone Transmitter. J. A. Lakin, Westfield, Mass.

## MAY 29TH.

- 278,355 Carbon Plates, Apparatus for Making. E. J. Molera and J. C. Cebrian, San Francisco, Cal.  
 278,418 Electric Currents from High to Low Tension, Apparatus for Translating. T. A. Edison, Menlo Park, N.J.  
 278,405 Electric Light Conductors, Support for. L. Stieringer, New York, N.Y.  
 278,516 Electric Machine, Dynamo. A. F. Delafield, Noroton, Conn.  
 278,419 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 278,641 Electric Machine, Dynamo. E. Weston, Newark, N.J.  
 278,413 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 278,414 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 278,640 Electric Machine Regulator, Dynamo. E. Weston, Newark, N.J.  
 278,353 Electric Switch Board. W. J. McElroy, Pittsburg, Pa.  
 278,635 Electrical Conductors, Protector Attachment for. W. E. Townsend, Jr., Brooklyn, N.Y.  
 278,346 Electrical Connector. H. E. Long, London, Ontario, Canada.  
 278,535 Electrical Distribution, System of. E. T. Greenfield, New York, N.Y.  
 278,638 Electrodes for Secondary Batteries, Making. W. Wallace, Ansonia, Conn.  
 278,536 Insulating Material, Electrical. J. Greives, Paterson, N.J.  
 278,618 Insulator Brackets, Machine for making Telegraph. J. B. Smith, Sunapee, N.H.  
 278,619 Insulator Pins, Machine for Making Telegraph. J. B. Smith, Sunapee, N.H.  
 278,642 Lamp Bracket or Fixture, Incandescent. E. Weston, Newark, N.J.  
 278,415 Lamps, Manufacture of Incandescing, Electric. T. A. Edison, Menlo Park, N.J.  
 278,416 Lamps, Manufacture of Incandescing, Electric. T. A. Edison, Menlo Park, N.J.  
 278,417 Lamps, Manufacture of Incandescing, Electric. T. A. Edison, Menlo Park, N.J.  
 278,351 Telephone Circuit. J. A. McCoy, Fall River, Mass.  
 278,367 Telephone, Exchange Circuit. C. E. Scribner, Chicago, Ill.  
 278,613 Telephone Exchange System and Apparatus. F. Shaw, New York, N. Y., and W. A. Childs, Englewood  
 278,322 Telephone Signaling Apparatus. W. J. Dudley, Boston, Mass.  
 278,414 Telephone Switch. H. W. Breckenridge, Providence, R.I.  
 278,357 Telephone Time Signal. J. M. Oram, Dallas, Texas.  
 278,411 Telephonically, System and Apparatus for Communicating. C. T. Dickson, Cincinnati, Ohio.  
 278,505 Toy, Electric. R. Lembecke, Hoboken, N.J.

## JUNE 5TH.

- 278,946 Clock Movement, Electric. J. Happersberger, Cincinnati, Ohio.  
 278,881 Electric Apparatus, Commutator for. W. H. Chapman, Middlebury, Vt.  
 278,846 Electric Circuit and Apparatus for Synchronizing Clock Pendulums. H. L. Bailey, Brooklyn, N.Y.  
 279,023 Electric Circuit Opener, Automatic. W. H. Sawyer, Providence, R.I.  
 278,983 Electric Machine, Dynamo. A. M. Loryea and C. H. Palmer, New York, N.Y.  
 279,007 Electric Motor. C. C. Peck and W. H. Chapman, Middlebury, Vt.  
 279,008 Electric Motor. C. C. Peck and W. H. Chapman, Middlebury, Vt.  
 279,036 Electric Motor. H. W. Spang, Reading, Pa.  
 278,811 Electric Wire. C. McIntire, Newark, N.J.  
 278,886 Electric Wire Protector. J. O. Cottrell, Fanwood, N.J.  
 279,005 Electrical Apparatus for Automatic Signaling. J. C. Wilson, Boston, Mass.  
 278,885 Electrical Wire Protector. J. O. Cottrell, Fanwood, N.J.  
 279,045 Electro-magnetic Motor. W. M. Thomas, Cincinnati, Ohio.  
 278,700 Electro-magnetic Motor, Rotary. J. B. Atwater, Chicago, Ill.  
 278,753 Insulating Telegraph Wires. T. A. Smith, Chicago, Ill.  
 278,679 Lamp Cut-out, Arc. C. B. Bosworth and F. A. Swan, Boston, Mass.  
 278,832 Lamp, Electric. P. Tilson, Lyons, France.  
 279,103 Lamp, Electric-arc. J. Olmsted, New York, N.Y.  
 278,797 Lamp Support, Electric. A. L. Ide, Springfield, Ill.  
 278,940 Railway Signal, Electric. W. Hadden, Brooklyn, N.Y.  
 279,046 Storage Battery. C. T. Tomkins, New York, N.Y.  
 278,908 Telegraph and Telephone Cable. C. Huck, New Orleans, La.  
 278,730 Telephone Lines, Angle-hanger for Mechanical. G. F. Shaver, Erie, Pa.

## JUNE 12TH.

- 279,315 Brush, Electric. J. N. Aronson, London, England.  
 279,483 Burglar Alarm Circuit Closer. W. C. Fisher, Boston, Mass.  
 279,400 Carbon Plates, Manufacture of Porous. C. H. Koyl, Baltimore, Md.  
 279,230 Clocks, Electro-magnetic, Motor for. H. Grau, Cassel, Prussia, Germany.  
 279,180 Electric Conductor. J. W. Rogers, New York, N.Y.  
 279,224 Electric Light. J. G. Chasse, Springfield, Mass.  
 279,476 Electric Machine, Dynamo. R. E. Ball, New York, N.Y.  
 279,362 Electric Machine, Dynamo. N. H. Edgerton, Philadelphia, Pa.  
 279,369 Electric Machines, Armature for Dynamo. E. R. Knowles, Brooklyn, N.Y., and F. E. Idell, Hoboken, N.J.  
 279,362 Electric Wires, Underground Conduit for. W. H. Johnston, Philadelphia, Pa.  
 279,346 Electrode for Secondary Batteries. N. C. Cookson, Newcastle-upon-Tyne, County of Northumberland, E.  
 279,322 Fences, Electrical Device for Protecting Wire. C. A. Brainerd, Chicago, Ill.  
 279,472 Lamp, Electric. J. J. Wood, Brooklyn, N.Y.  
 279,512 Lamp, Electric. J. J. Wood, Brooklyn, N.Y.  
 279,393 Lamp, Electric-arc. N. H. Edgerton, Philadelphia, Pa.  
 279,152 Lamp, Electric-arc. J. H. Guest, Brooklyn, N.Y.  
 279,371 Measuring Electric Currents, Apparatus for. S. L. Fox, London, England.  
 279,327 Telegraph and Clock System, Combined. C. E. Buell, New Haven, Conn.  
 279,289 Telegraph and Telephone Line. T. N. Vail, Boston, Mass.  
 279,471 Telephone Switch Boards, Looping in Mechanism for. E. M. Wilson, Worcester, Mass.  
 279,401 Telephone Transmitter. J. A. Lakin Westfield Mass.  
 279,193 Telephonic and Burglar Alarm System, Combined. W. S. Shoupe, Elyria, Ohio, and T. Baskirk, Toledo,

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## JUNE 19TH.

- 1 Belt, Electro-galvanic. G. E. Palmer, Boston, Mass.
- 2 Electric-arc Lighting System. R. J. Sheehy, New York, N.Y.
- 3 Electric Circuit Cut-out. A. L. Bogart, Jamaica, N.Y.
- 4 Electric Machines, Combined Current Indicator and Commutator Adjuster for Dynamos. R. J. Sheehy, New York, N.Y.
- 5 Electrical Conductors, Underground System of Laying. J. E. Hamilton, New York, N.Y.
- 6 Electrical Instrument Protector. M. D. Connolly, Philadelphia, Pa. and T. A. Connolly, Washington, D.C.
- 7 Electrical Switch Board Plug. E. Flint, Jr., Boston, Mass.
- 8 Galvanic Battery. T. L. Kauffer and J. Seron, Boston, Mass.
- 9 Insulator, Electrical (re-issue). D. M. Stewart, Cincinnati, Ohio.
- 10 Lamp, Electric-arc. H. Ansot, New York, N.Y.
- 11 Lamp, Electric-arc. R. J. Sheehy, New York, N.Y.
- 12 Lamp, Incandescent. C. Richter, Camden, N.J.
- 13 Secondary Electric Battery. E. T. Starr, Philadelphia, Pa.
- 14 Signal and Messenger Call Box, District. E. W. Applegate, Washington, D.C.
- 15 Telegraph Alarm, Printing. S. D. Field, New York, N.Y.
- 16 Telegraph, Printing. E. V. Esick, Alliance, Ohio.
- 17 Telegraph, Printing. S. D. Field, New York, N.Y.
- 18 Telegraph Printing. S. D. Field, New York, N.Y.
- 19 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 20 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 21 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 22 Telegraphic Repeater. J. P. Smithers, Brooklyn, N.Y.
- 23 Telephone Switch Board. E. B. Hamlin, Chicago, Ill.

## JUNE 26TH.

- 24 Annunciator, Telephone. F. B. Hazlett, Freeport, Ill.
- 25 Car for Locomotives, Electrical Pilot. S. H. Knapp and A. E. Adams, Danbury, Conn.
- 26 Electric Generator, Dynamo. I. Fisher, Medford, Mass.
- 27 Electric Machine, Dynamo. J. Hopkinson and A. Muirhead, Westminster, England.
- 28 Electric Machines, Commutator for Dynamo. F. M. Brown, Boston, Mass., and C. B. Bosworth, Everett, Mass.
- 29 Electric Wire, Conduit. S. Parker, Chicago, Ill.
- 30 Insulated Electric Conductor. G. S. Eaton, Brooklyn, N.Y.
- 31 Isolator and Lightning Arrestor, Combined. J. E. Noble, Mulberry, Ohio.
- 32 Lamp, Electric-arc. F. S. Geil, Brooklyn, N.Y.
- 33 Lamp, Incandescent Electric. R. H. S. Thompson, Lexington, Ky.
- 34 Railway Signal, Electric. D. C. Farrington, Lowell, Mass.
- 35 Telegraphy, Duplex and Multiplex. G. W. Gardanier, Brooklyn, N.Y.
- 36 Telephone Exchange Apparatus. T. A. Watson, Everett, Mass.
- 37 Telephone Receiver, Adjustable Double. D. G. Barnard, Winslow, N.J.
- 38 Type-writer, Electrical. J. A. Parks and G. V. Sheffield, New York, N.Y.

## JULY 3RD.

- 39 Burglar Alarm Attachment for Automatic Signaling Apparatus, Electric. W. F. Chester, New York, N.Y.
- 40 Burglar Alarm, Electric. O. A. Helman, Cincinnati, Ohio.
- 41 Electric Cable. W. H. Sawyer, Providence, R.I.
- 42 Electric Cable or Conductor. L. A. F. Herrmann, Paris, France.
- 43 Electric Cables, Machine for making. E. E. and E. G. Rafer, S. Chamond, France.
- 44 Electric Conductor or Cable. J. W. Rogers, New York, N.Y.
- 45 Electric Light. F. L. Senour, New Alexandria, Pa.
- 46 Electric Machine, Dynamo. F. Bain, Minneapolis, Minn.
- 47 Electric Machine, Dynamo. R. E. Ball, New York, N.Y.
- 48 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 49 Gas Lighting Apparatus. J. H. Towan, Charlestown, Mass.
- 50 Insulated Electrical Conductor. T. H. Dunham, Boston, Mass.
- 51 Insulated Compound for Electric Wires (Re-issue). R. S. Waring, Pittsburg, Pa.
- 52 Insulating Material for Electrical Uses. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 53 Insulating Wires for Electric Uses, Process of, and Apparatus for. (Re-issue). R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 54 Lamp Carbon, Incandescent Electric. A. Bernstein, Boston, Mass.
- 55 Lamp, Electric-arc. F. Bain, Minneapolis, Minn.
- 56 Lamp, Electric-arc. Y. Rabl, Camden, N.J.
- 57 Lamp, Incandescent Electric. A. Bernstein, Boston, Mass.
- 58 Lamps, Focus-regulator for Electric-arc. W. Wheeler, Concord, Mass.
- 59 Locomotive, Electro-magnetic. S. H. Beckwith, Utica, N.Y.
- 60 Measuring Apparatus, Electrical. C. S. Bradley, New York, N.Y.
- 61 Telegraph, Fire Alarm or District. W. B. Vansise, Brooklyn, N.Y.
- 62 Telegraph Lines, Automatic Roll-call for. W. P. Harris, S. Chicago, Ill.
- 63 Telegraphy, Duplex and Quadruplex. A. Muirhead, London, England.
- 64 Telephone Call Bell. H. Clay, Philadelphia, Pa.
- 65 Telephone Central Office Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 66 Telephone Switch Board. H. Clay, Philadelphia, Pa.
- 67 Telephone Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 68 Telephone Systems, Automatic Indicator, Switch for. G. L. Anders, Boston, Mass.
- 69 Telephone Transmitter. H. Clay, Philadelphia, Pa.
- 70 Telephonic Communication, Apparatus and System for. A. Dunand, Paris, France.

## JULY 10TH.

- 71 Electric Carbon. H. Fraisch, Cleveland, Ohio.
- 72 Electric Circuit Breaker, Automatic. L. J. Phelps, New York, N.Y.
- 73 Electric Conductor. H. D. Rogers, New York, N.Y.
- 74 Electric Light Tower. B. F. Orton, East Saginaw, Mich.
- 75 Electric Machine, Dynamo. J. E. Giles, Hazleton, Pa.
- 76 Electric Machines, Armature for Dynamo. W. P. Freeman, New York, N.Y.
- 77 Electric Underground Cable. F. A. Smith, Macomb, Ill.
- 78 Electric Wires, and Adjusting the Wires in the same Ventilating Conduit, for. W. Hendley, Washington, D.C.
- 79 Electric Wires, Conduit for Underground. J. Du Shane, South Bend, Ind.
- 80 Exercising Apparatus, Electrical. W. T. McGinnis, New York, N.Y.
- 81 Fire Extinguisher and Fire Alarm System, Electric. C. E. Buell, New Haven, Conn.
- 82 Furnace for the Manufacture of Carbon. H. Fraisch, Cleveland, Ohio.
- 83 Galvanic Battery. W. W. Karshner, Washington, D.C.
- 84 Insulator for Electrical Conductors. P. C. Ohi, Plainfield, N.J.



- 280,882 Liquors with Electricity, Treating, Alcoholic. A. C. Tichenor, Alameda, Cal.  
 281,176 Measuring the Current Energy received by a Secondary Battery, Apparatus for. C. F. Brush, Cleveland, Ohio.  
 281,224 Mirrors, Electrically Heated. B. H. Goodsell, C. Adamson and C. O. Herting, Philadelphia, Pa.  
 281,175 Secondary Battery Charging, Current Manipulator for. C. F. Brush, Cleveland, Ohio.  
 281,156 Secondary Battery or Electric Accumulator. E. T. Starr, Philadelphia, Pa.  
 281,064 Telegraph and other Wires, Conduit for Underground Lines for. W. Hendley, Washington, D.C.  
 281,117 Telegraph Quadruplex. A. Muirhead, London, England.  
 281,118 Telegraph Quadruplex. A. Muirhead and G. K. Winter, London, Eng.  
 280,916 Telegraph and Telephone Protector. C. C. Drake, Trenton, N.J.  
 280,948 Telephone Call. P. C. Ohl, Plainfield N.J.  
 281,000 Telephone Receiver. J. F. Batchelor, Baltimore, Md.  
 280,800 Telephone Receiver. L. J. Crossley, Halifax, County of York, Eng.

JULY 17TH.

- 281,576 Electric Light Circuits, Safety Catch for. L. Stieringer, New York, N.Y.  
 281,285 Electric Lights, Carbon Electrode for. J. A. Moffitt, Arlington, Mass.  
 281,416 Electric Machine, Dynamo. E. Thomson, New Britain, Conn.  
 281,353 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 281,349 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 281,350 Electric Machine Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 281,363 Electric Switch. D. P. Heap, U. S. Army.  
 281,351 Electrical Generator. T. A. Edison, Menlo Park, N.J.  
 281,345 Gas Lighter, Electric. C. H. Crockett, Boston, Mass.  
 281,471 Gas Lighter, Electric. W. A. Drysdale, Philadelphia, Pa.  
 281,452 Insulator, Telegraph. T. L. Chapman, Huntington, W., Va.  
 281,229 Lamp, Electric. C. M. Ball, Troy, N.Y.  
 281,412 Lamps, Automatic Regulator for Incandescent. E. T. & E. E. Starr, Philadelphia, Pa.  
 281,362 Telegraph Key, Initiation. L. H. Hart, New York, N.Y.  
 281,339 Telegraph, Multiplex. E. A. Calahan, Brooklyn, N.Y., and P. B. Delany, New York, N.Y.  
 281,249 Telegraph, Quadruplex. G. D'Inville, New York, N.Y.  
 281,560 Telephone. J. H. Rogers, New York, N.Y.  
 281,407 Telephone, Acoustic. C. Seldon, St. Louis, Mo.  
 281,614 Telephone Call, Individual. J. H. Cary, Boston, Mass.  
 281,413 Telephone Circuit. J. M. Stearns, Jr., Brooklyn, N.Y.  
 281,414 Telephone, Electric. J. M. Stearns, Jr., Brooklyn, N.Y.  
 281,613 Telephone Exchange, Automatic. G. A. Cardwell, Brooklyn, N.Y.  
 281,406 Telephone, Mechanical. C. Seldon, St. Louis, Mo.  
 281,381 Telephone Support. C. T. Loring, Boston, Mass.  
 281,478 Telephone System and Apparatus. I. H. Farnham, Portland, Me.  
 281,240 Telephone Transmitter. J. H. Cheever, Somerville, Mass.  
 281,450 Telephones, Individual Signaling, Apparatus for. J. H. Cary, Boston, Mass.  
 281,579 Valve-gear for Steam Engines, Electric. G. W. Storer, Philadelphia, Pa.

JULY 24TH.

- 281,788 Automatic Printing Telegraph. Francesco Ostrogovich, Florence, Italy.  
 281,790 Automatic Cut-out for Electric Circuits. Robert J. Sheehy, New York.  
 281,937 Automatic Electric Switch. Henry W. Spang, Reading, Pa.  
 282,010 Carrier for Underground Wires. Theodore A. B. Putnam, New York, N.Y.  
 281,904 Dynamo and Magneto-electric Machine. John M. McMahon, Jersey City, N.J.  
 281,985 Dynamo-electric Machine. Edgar A. Edwards, Cincinnati, O.  
 281,672 Electric Railway. Francis B. Crocker, Charles G. Curtis and Schuyler S. Wheeler, New York, N.Y.  
 281,680 Electric Fire Alarm and Call Bell System. Charles Henry Frank, Amsterdam, N.Y.  
 281,608 Electric Arc-lamp. Nathaniel S. Keith.  
 281,800 Electric Light Regulator. Robert J. Sheehy, New York, N.Y.  
 281,877 Electric Temperature Indicator. Robt. Hewitt, Jr., New York, N.Y.  
 281,884 Electric Tele-thermoscope. Warren S. Johnson, Whitewater, Wis.  
 281,891 Electric-arc Lamp. John Lea, London, County of Middlesex, England.  
 281,931 Electric Call Apparatus. Charles S. Shriver, Brooklyn, N.Y.  
 282,016 Electric Annunciator and Fire Alarm. Samuel Van Benschoten, Brooklyn, N.Y.  
 281,841 Insulated Electric Conductor. Alfred A. Cowles, New York, N.Y.  
 281,969 Insulating Compound for Electric Conductors and Apparatus for Compounding and Applying the same. J. Hyde, New York, N.Y.  
 281,741 Spring Jack Switch for Telephone Exchanges. James C. Warner, Chicago, Ill.  
 281,723 Lightning Arrestor for Electric Wires. Wm. R. Patterson, Chicago, Ill.  
 281,864 Manufacture of Insulated Electric Conductors. Jos. F. Gilpin, Ansonia, Conn.  
 281,730 Railway Electrical Circuit Coupler. Palmer C. Ricketts, Troy, N.Y.  
 281,839 Railway Pneumatic Switch and Electric Indicator. Charles A. Cooper, Pittsburg, Pa.  
 281,722 System of Laying Subterranean Electrical Conductors. W. R. Patterson, Chicago, Ill.  
 281,806 Transmitting Apparatus for Telephone Lines. Thomas D. Lockwood, Malden Mass.  
 281,864 Manufacture of Insulated Electric Conductors. Jos. F. Gilpin, Ansonia, Conn.  
 282,016 Annunciator and Fire Alarm, Electric. S. Van Benschoten, Brooklyn, N.Y. and H. H. Johnson, Hackensack  
 281,931 Electric Call Apparatus. C. S. Shriver, Brooklyn, N.Y.  
 281,799 Electric Circuits, Automatic Cut-out for. R. J. Sheehy, New York, N.Y.  
 281,800 Electric Light Regulator. R. J. Sheehy, New York, N.Y.  
 281,985 Electric Machine, Dynamo. E. A. Edwards, Cincinnati, Ohio.  
 281,904 Electric Machine, Dynamo and Magneto. J. M. McMahon, Jersey City, N.J.  
 281,937 Electric Switch, Automatic. H. W. Spang, Reading, Pa.  
 281,722 Electrical Conductors, System of Laying Subterranean. W. R. Patterson, Chicago, Ill.  
 281,680 Fire Alarm and Call Bell System, Electric. C. H. Frank, Amsterdam, N.Y.  
 281,841 Insulated Electric Conductor. A. A. Cowles, New York, N.Y.  
 281,864 Insulated Electric Conductors, Manufacture of. J. F. Gilpin, Ansonia, Conn.  
 281,969 Insulating Compound for Electrical Conductors, and Apparatus for Compounding and Applying the same. Hyde, New York, N.Y.  
 281,608 Lamp, Electric-arc. N. S. Keith, New York, N.Y.  
 281,891 Lamp, Electric-arc. J. Lea, London, County of Middlesex, England.  
 281,723 Lightning Arrestor for Electric Wires. W. R. Patterson, Chicago, Ill.  
 281,672 Railway Electric. F. B. Crocker, C. G. Curtis and S. S. Wheeler, New York, N.Y.  
 281,839 Railway Pneumatic Switch and Electric Indicator. C. A. Cooper, Pittsburg, Pa.  
 281,864 Tele-thermoscope, Electric. W. S. Johnson, Whitewater, Wis.  
 281,788 Telegraph, Automatic Printing. F. Ostrogovich, Florence, Italy.  
 281,741 Telephone Exchanges, Spring-jack Switch for. J. C. Warner, Chicago, Ill.  
 281,805 Telephone Lines, Transmitting Apparatus for. T. D. Lockwood, Malden, Mass.  
 281,877 Temperature Indicator, Electric. R. Hewitt, Jr., New York, N.Y.  
 281,859 Vehicle Propelled by Electricity. E. Fox, Brooklyn, N.Y.



JULY 31st.

- 106 Bell Pull, Electric. F. J. Wall, Lawrence, Mass.
- 107 Deepatch Tube, Electro-magnetic. C. A. Cheever, New York, N.Y.
- 107 Electric Light Brackets, Joint for. C. H. Hinds, New York, N.Y.
- 108 Electric Light Joint. C. H. Hinds, New York, N.Y.
- 108 Electric Machine Dynamo. S. Z. De Ferranti, Richmond Gardens, Shepherd's Bush, County of Middlesex, England, and A. Thompson, Guilford Place, Russell Square, County of Middlesex, England.
- 109 Electric Machine, Dynamo. E. B. Knowles, Brooklyn, N.Y.
- 109 Electric Machines, Automatic Regulator for Dynamo. F. S. Giel, Brooklyn, N.Y.
- 109 Electricity, Apparatus for Lighting Cars by. G. D. Burton, New Ipswich, N.H.
- 109 Gas Burner, Electric Lighting. A. L. Bogart, Jamaica, N.Y.
- 109 Lamp, Electric-arc. E. B. Knowles, Brooklyn, N.Y.
- 109 Lamp Globe, Electric. G. D. Burton, New Ipswich, N.H.
- 109 Lamp, Incandescent, Electric. I. Adams, Jr., Boston, Mass.
- 109 Lamp, Incandescent, Electric. E. B. Knowles, Brooklyn, N.Y.
- 109 Lamps, Manufacture of Incandescent. A. Swan, Gateshead, County of Durham, England.
- 109 Lightning Rod. T. H. Dodge, Worcester, Mass.
- 109 Magneto-electric Signaling Apparatus. T. A. Edison, Menlo Park, N.J.
- 109 Measuring Electric Currents, Apparatus for. S. Z. De Ferranti, Richmond Gardens, Shepherd's Bush, County of Middlesex, England, and A. Thompson, Guilford Place, Russell Square, County of Middlesex, England.
- 109 Ore Separator, Electric. H. Grove, St. Paul, Minn.
- 109 Railway Electric Signal Apparatus. C. A. Scott, Boston, Mass.
- 109 Railway Electric Signaling Apparatus. C. A. Scott, Boston, Mass.
- 109 Secondary Battery. E. T. Starr, Philadelphia, Pa.
- 109 Secondary Battery Indicator. E. Weston, Newark, N.J.
- 109 Secondary Electric Battery. C. J. Van Depoele, Chicago, Ill.
- 109 Telegraphs, Dynamo-electric Machine for Printing. S. D. Field, New York, N.Y.
- 109 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 109 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 109 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 109 Therapeutic Apparatus, Electro. A. W. K. Andrews, Binghamton, N. Y., and C. R. Teed, Syracuse, N.Y.
- 109 Automatic Regulator for Dynamo-electric Machines. Franz S. Giel, Brooklyn, N.Y.
- 109 Apparatus for Lighting Cars by Electricity. George D. Burton, New Ipswich, N.H.
- 109 Apparatus for Measuring Electric Currents. Sebastian Ziani De Ferranti and Alfred Thompson, England.
- 109 Dynamo-electric Machine. Edward R. Knowles, Brooklyn, N.Y.
- 109 Device for Lighting Petroleum or gas Lamps. Paul Richter, Germany.
- 109 Dynamo-electric Machines for Printing Telegraphs. Stephen D. Field, New York, N.Y.
- 109-5-6 Dynamo Telegraphy. Stephen D. Field, New York, N.Y.
- 109 Electric Bell-pull. Frank J. Wall, Lawrence, Mass.
- 109 Electric-lighting Gas Burner. A. L. Bogart, Jamaica, N.Y.
- 109 Dynamo-electric Machines. Sebastian Ziani De Ferranti and Alfred Thompson.
- 109 Electric-arc Lamp. Edward R. Knowles, Brooklyn, N.Y.
- 109 Electric Lamp Globe. George D. Burton, New Ipswich, N.H.
- 109 Electric Ore-separator. Hermann Grove, St. Paul, Minn.
- 109 Electro-magnetic Dispatch-tube. Charles A. Chever, New York.
- 109 Electro Therapeutic Apparatus. Abiel W. K. Andrews, Binghamton, and Cyrus R. Teed, Syracuse, N.Y.
- 109 Incandescent Electric Lamp. Isaac Adams Jr., Boston, Mass.
- 109 Joint for Electric-light Brackets. Chas. H. Hinds, New York, N.Y.
- 109 Joint for Electric Light. Charles H. Hinds, New York, N.Y.
- 109 Lightning Rod. Thomas H. Dodge, Worcester Mass.
- 109 Manufacture of Incandescent Lamps. Alfred Swan, England.
- 109 Magneto-electric Signaling Apparatus. Thomas A. Edison, Menlo Park, N.J.
- 109 Ozone Apparatus. Henry D. Hall, New York.
- 109 Railway Electric Signal Apparatus. Charles A. Scott, Boston, Mass.
- 109 Secondary Battery. Eli T. Starr, Philadelphia, Pa.
- 109 Secondary Electric Battery. Charles J. Van Depoele, Chicago, Ill.
- 109 Incandescent Electric Lamp. Edward R. Knowles, Brooklyn, N.Y.

AUGUST 7th.

- 110 Electric Circuit Breaker. S. M. Flush, Philadelphia, Pa.
- 110 Electric Conductor Conduit. L. Bannister, Philadelphia, Pa.
- 110 Electrical Indicators, Unison Mechanism for. F. H. Snell, Washington, D.C.
- 110 Galvanic Battery. E. F. Schlosser, Hoboken, N.J.
- 110 Gas Burner, Electric. C. H. Hinds, New York, N.Y.
- 110 Gas Lighting and Extinguishing Device, Electric. L. S. White, Waterbury, Conn.
- 110 Insulators, Compound for Electric Wire. J. F. Martin, Chicago, Ill.
- 110 Lamp Fixture for Bracket, Electric. C. W. Holtzer, Brookline, Mass.
- 110 Lamp, Incandescent Electric. P. R. D. D'Humy, Carlton Mansions, Clapham Rise, County of Surrey, England.
- 110 Lamp, Incandescent Electric. E. B. Knowles, Brooklyn, N.Y., and F. E. Idell, Hoboken, N.J.
- 110 Lamps, Manufacture of Incandescent Electric. J. H. Guest, Brooklyn, N.Y.
- 110 Lightning Rod. T. H. Patee, Greencastle, Ind.
- 110 Telegraph Pole. T. Breen, Knowlton, Pa.
- 110 Telephone and Telegraph Wires, &c., Machinery for Covering. J. A. Sparling, London, County of Middlesex, England.
- 110 Telephone Cabinet. B. Busted, Brooklyn, N.Y.
- 110 Telephone Central Office Apparatus. W. M. Brock, Shamokin, Pa.
- 110 Telephonic Circuit. W. H. Eckert, and J. A. Seely, New York, N.Y.
- 110 Battery Box or Vessel. Eli T. Starr, Philadelphia.
- 110 Conduit for Electric Conductors. Lamuel Bannister, Philadelphia.
- 110 Electric Gas Lighting and Extinguishing Device. Le Roy, S. White, Waterbury, Conn.
- 110 Electric Gas Burner, Charles H. Hinds, New York.
- 110 Electric Circuit Breaker. Samuel M. Flush, Philadelphia.
- 110 Fixture or Bracket for Electric Lamps. Charles W. Holtzer, Brookline, Mass.
- 110 Galvanic Battery. E. F. Schlosser, Hoboken, N.J.
- 110 Incandescent Electric Lamp. E. B. Knowles, Brooklyn, N.Y.
- 110 Lightning rod. Theodorus H. Patee, Greencastle, Ind.
- 110 Machinery for Covering Telephone and Telegraph Wires, &c. John Alexander Sparling, London, England.
- 110 Manufacture of Incandescent Electric Lamps. John H. Guest, Brooklyn, N.Y.
- 110 Telegraph Pole. Thomas Breen, Knowlton, Pa.
- 110 Telephone Central Office Apparatus. W. M. Brock, Shamokin, Pa.
- 110 Telephone Cabinet. Richard Busted, Brooklyn, N.Y.
- 110 Incandescent Electric Lamp. Paul Ragout de Faucheux d'Humy, Clapham Rise, Surrey, England.
- 110 Telephone Circuit. Wm. H. Eckert and John A. Seely, New York, N.Y.
- 110 Unison Mechanism for Electrical indicators. Frank H. Snell Washington.

## AUGUST 14TH.

- 283,355 Electric Battery. C. P. Orm, Cambridge, Mass.  
 283,132 Electric Circuit Track Instrument. C. A. Scott, Boston, Mass.  
 283,167 Electric Commutator or Switch. E. Thomson, New Britain, Conn.  
 283,343 Electric Machine, Dynamo. E. J. Houston, Philadelphia, Pa.  
 283,155 Electric Machine Regulator, Dynamo. R. J. Sheehy, New York, N.Y.  
 283,044 Insulate, Preserve and Protect Wire for Electrical Purposes, Composition to. D. B. Turner, Chicago, Ill.  
 282,989 Insulators, Apparatus, for Making Glass. M. Johnson, Ellenville, N.Y.  
 283,186 Lamp, Electric. F. Bain, Union City, Ind.  
 283,168 Lamp, Electric. E. Thomson, New Britain, Conn.  
 283,042 Lamp, Electric-arc. W. M. Thomas, Cincinnati, Ohio.  
 283,270 Lamp, Incandescing Electric. S. D. Mott, Menlo Park, N.J.  
 283,166 Roof, Insulated Metallic. H. C. Thomas, Rock View, N.Y.  
 283,295 Secondary Battery. E. T. Starr, Philadelphia, Pa.  
 283,073 Speaking Tubes, Electrical Indicator for. J. Capron, New York, N.Y.  
 283,231 Switch and Signal Levers, Electric Locking, Mechanism for. O. Gassett, Boston, Mass.  
 283,140 Telegraph Lines, Ground Wire Clamp for. H. W. Pope, Elizabeth, N.J.  
 282,969 Telephone. C. Egan, Zanesville, Ohio.  
 283,334 Telephone Central Office Apparatus. L. B. Firman, Chicago, Ill.  
 283,312 Telephone Lines, Sprink-jack and Circuit for Through. C. H. Wilson, Chicago, Ill.  
 283,354 Telephone Local Call Instrument. W. Nichols, Boston, Mass.  
 283,462 Telephone, Speaking. F. Blake, Jr., Weston, Mass.  
 283,123 Telephone Transmitter. W. C. Lockwood, Brooklyn, N.Y.  
 282,964 Tin from Tin-scrap by Electricity, Removing. J. L. Delaplain, J. G. Hendrickson, F. J. Clamer, Philadelphia, Pa.  
 283,200 Wires, Composition for Coating and Insulating Underground. H. R. Brissett and J. Howe, Tyngsborough, Mass.  
 283,530 Annunciator, Electric. E. Flint, Jr., Boston, Mass.  
 283,433 Electric Conductor. H. D. Stanley and G. Doolittle, Bridgeport, Conn.  
 283,408 Electric Machine, Dynamo. A. M. Loryea, and C. H. Palmer, New York, N.Y.  
 283,548 Electric Machine, Dynamo. E. Weston, Newark, N.J.  
 283,624 Electric Machines, Armature for Dynamo. J. T. Lister, Cleveland, Ohio.  
 283,547 Electrical Meter. E. Weston, Newark, N.J.  
 283,736 Electrical Signaling Device. W. S. Johnson, Washington, D.C.  
 283,546 Electro-Magnet Motor. E. Weston, Newark, N.J.  
 283,482 Lamp, Electric. C. D. Haskins, New York, N.Y.  
 283,629 Lamp, Electric. H. S. Maxim, Brooklyn, N.Y.  
 283,437 Lamp, Electric. E. Thomson, New Britain, Conn.  
 283,662 Lamp, Electric-arc. C. Richter, Camden, N.J.  
 283,655 Telegraph, Automatic. G. W. Rogers, New York, N.Y.  
 283,716 Telegraph Transmitter. H. Lyon, New York, N.Y.  
 283,626 Telephone Exchanges, Signaling Apparatus for. T. D. Lockwood, Malden, Mass.  
 283,492 Telephonic and Telegraphic Instruments, Apparatus for Protecting. F. E. Kinsman, New York, N.Y.  
 282,989 Apparatus for Making Glass Insulators. Matthew Johnson, Ellenville, N.Y.  
 283,200 Composition for Coating and Insulating Underground Wires. Henry B. Brissett, Lowell, Mass.  
 283,044 Composition to Insulate, Preserve and Protect Wire for Electrical Purposes. Douce B. Turner, Chicago, Ill.  
 283,073 Electric Indicator for Speaking Tubes. Jacob Capron, New York, N.Y.  
 283,042 Electric Arc Lamp. William M. Thomas, Cincinnati, O.  
 283,355 Electric Battery. Chas. P. Orm, Cambridge, Mass.  
 283,152 Electric Circuit Track Instrument. Charles A. Scott, Boston, Mass.  
 283,167 Electric Commutator or Switch. Elihu Thomson, New Britain, Conn.  
 283,186 Electric Lamp. Forde Bain, Union City, Ind.  
 283,231 Electric Locking Mechanism for Switch and Signal Levers. Oscar Gassett, Boston, Mass.  
 283,270 Incandescing Electric Lamp, Samuel D. Mott, Menlo Park, N.J.  
 282,964 Removing Tin from Tin Scrap by Electricity. James L. Delaplain, Joseph G. Hendrickson and Francis J. C. Philadelphia, Pa.  
 283,138 Rheostat. George W. O'Hara, Kalamazoo, Mich.  
 283,295 Secondary Battery. Eli T. Starr, Philadelphia, Pa.  
 283,062 Speaking Telephone. Francis J. Blake, Weston, Mass.  
 283,312 Spring Jack and Circuit for Through Telephone Lines. Charles H. Wilson, Chicago, Ill.  
 282,969 Telephone. Charles Egan, Zanesville, O.  
 283,354 Telephone Local Call Instrument. William Nichols, Boston, Mass.  
 283,123 Telephone Transmitter. William C. Lockwood, Brooklyn, N.Y.  
 283,155 Regulator for Dynamo-electric Machines. Robert J. Sheehy, New York, N.Y.  
 283,168 Electric Lamp. Elihu Thomson, New Britain, Conn.  
 283,334 Central Office Apparatus for Telephones. Leroy B. Firman, Chicago, Ill.  
 283,543 Dynamo-electric Machine. Edwin J. Houston, Philadelphia, Pa.

## AUGUST 21st.

- 283,590 Annunciator, Electric. E. Flint, Jr., Boston, Mass.  
 283,433 Electric Conductor. H. D. Stanley and G. Doolittle, Bridgeport, Conn.  
 283,408 Electric Machine, Dynamo. A. M. Loryea and C. H. Palmer, New York, N.Y.  
 283,548 Electric Machine, Dynamo. E. Weston, Newark, N.J.  
 283,624 Electric Machines, Armature for Dynamo. J. T. Lister, Cleveland, Ohio.  
 283,547 Electrical Meter. E. Weston, Newark, N.J.  
 283,736 Electrical Signaling Device. W. S. Johnson, Washington, D.C.  
 283,546 Electro-magnetic Motor. E. Weston, Newark, N.J.  
 283,482 Lamp, Electric. C. D. Haskins, New York, N.Y.  
 283,629 Lamp, Electric. H. S. Maxim, Brooklyn, N.Y.  
 283,437 Lamp, Electric. E. Thomson, New Britain, Conn.  
 283,662 Lamp, Electric-arc. C. Richter, Camden, N.J.  
 283,655 Telegraph, Automatic. J. W. Rogers, New York, N.Y.  
 283,716 Telegraph Transmitter. H. Lyon, New York, N.Y.  
 283,626 Telephone Exchanges, Signaling Apparatus for. T. D. Lockwood, Malden, Mass.  
 283,492 Telephonic and Telegraphic Instruments, Apparatus for Protecting. F. E. Kinsman, New York, N.Y.

## AUGUST 28th.

- 284,137 Cables, Testing Lead-covered. W. I. McElroy, Pittsburg, Pa.  
 284,094 Cables, Testing Lead-covered. H. Von Hovenberg, Elizabeth, N.J.  
 283,763 Electric Cable. T. B. Delany, New York, N.Y.  
 284,100 Electric Cable, Truck for paying off. R. S. Waring, Pittsburg, Pa.  
 284,099 Electric Cables, Joint Connection in Lead-covered. R. S. Waring, Pittsburg, Pa.  
 284,138 Electric Cables, Testing. W. J. McElroy, Pittsburg, Pa.  
 284,139 Electric Cables, Testing Box for Underground. W. J. McElroy, Pittsburg, Pa.  
 283,748 Electric Lights, Automatic Cut-out for. A. Bernstein, Boston, Mass.  
 284,110 Electric Machine, Dynamo. K. Zipernowsky and M. Derc, Buda-Pesth, Austria, Hungary.

# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- Electric Wires, Underground Conduit for. E. Omensetter, Philadelphia, Pa.
- Electrical Conductor. T. B. Delany, New York, N.Y.
- Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- Locomotive, Electric. L. Daft, Greenville, N.J.
- Locomotive, Electric. L. Daft, Greenville, N.J.
- Railway Rail, Electric. L. Daft, Greenville, N.J.
- Telegraph and Telephone Lines, Combined Cut-out and Ground Switch for. C. H. Lothrop, Lyons, Iowa.
- Telegraph, Duplex and Quadruplex. G. W. Gardanier, New York, N.Y.
- Telegraph Fire Alarm. T. Ahearn, Ottawa, Ontario.
- Telephone and Signal Circuit. E. P. Warner, Chicago, Ill.
- Telephone and Telegraph Lines, Signalling Apparatus for. E. Gray and F. L. Pope, Elizabeth, N.J.
- Telephone Call Boxes, Circuit for. C. E. Scribner, Chicago, Ill.
- Telephone Exchange. I. M. O'Donel, Pittsburg, Pa.
- Telephonic Apparatus. W. A. Belcher, Lowell, Mass.

## SEPTEMBER 4TH.

- Car Wheel and Brake, Electro-magnetic. H. M. Beidler, Texarkana, Ark.
- Clock, Primary Electric. D. F. Sweet, Hastings, Mich.
- Clocks, Circuit for Secondary Electric. H. L. Bailey, Brooklyn, N.Y.
- Electric Call and Signal. L. J. White, Waterbury, Conn.
- Electric Conductor, Compound. W. B. Hollingshead, New York, N.Y.
- Electric Light Stations, Switch Board for. R. J. Sheehy, New York, N.Y.
- Electric Lighting. K. W. Hedges, Westminster, England.
- Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.
- Electric Machine, Dynamo. W. B. Cleveland, Cleveland, Ohio.
- Electric Machine, Dynamo. W. B. F. Elphinstone and C. W. Vincent, Holloway, England.
- Electric Machine, Dynamo. J. E. H. Gordon, Gordon, England.
- Electric Motor. L. W. Stockwell, Cleveland, Ohio.
- Electric Wire Conduit. L. M. Green and I. P. Birch, Philadelphia, Pa.
- Electrical Conductor, Flexible. H. B. Lytle, Boston, Mass.
- Electro-magnetic Rheotome. F. L. Pope, Elizabeth, N.J.
- Lamp, Electric-arc. R. J. Sheehy, New York, N.Y.
- Lamp, Incandescent Electric. T. E. Gatehouse, Camberwell, England.
- Lamp Lighting Device, Electric. H. Van Hoevenbergh, Elizabeth, N.J.
- Storage Battery. C. T. Tomkins, New York, N.Y.
- Telegraph Blank. N. W. Hartwell, Louisville, Ky.
- Telegraph Keys, Automatic Circuit Closer for. S. J. Spurgeon Liberty, Mo.
- Telegraphs, Multiple Signal Box for Fire and District. J. C. Wilson, Boston, Mass.
- Telegraphic Apparatus. F. L. Pope, Elizabeth, N.Y.
- Telegraphy. G. Smith and T. F. Taylor, Brooklyn, N.Y.
- Telephone and Telegraph Cable. C. Huck, New Orleans, La.
- Telephone and Telegraph Cable. C. Huck, New Orleans, Pa.

## SEPTEMBER 11TH.

- Annunciator, Electrical. D. A. McCormich, Detroit, Mich.
- Burglar Alarm. W. H. Reiff, Philadelphia, Pa.
- Double Circuit Instrument. A. W. Hall, Meriden, Conn.
- Electric Battery. H. A. Burns, Ansonia, Conn.
- Electric Conductor, Underground. I. B. Hyde, New York, N.Y.
- Electric Conductors, Apparatus for Interlocking. A. W. Hall, Meriden, Conn.
- Electric Switch and Signal Apparatus. A. W. Hall, Meriden, Conn.
- Electric Switch or Circuit Controller. A. Bernstein, Boston, Mass.
- Electric Wire. W. Halkyard, Providence, R.I.
- Electric Wires, Safety Device for. A. Bernstein, Boston Mass.
- Electrical Conductor. F. Moore, Philadelphia, Pa.
- Electrical Conductors. Metallic Tip and Coupling for. G. E. Somers, Bridgeport, Conn.
- Electroliers, Suspending and Circuit Controlling, Mechanism for. A. W. Brewtnall, Westminster, England.
- Electric Signals, Apparatus for Interlocking. A. W. Hall, Meriden, Conn.
- Gas by Electricity, Apparatus for Lighting. H. J. Warren and H. F. Packard, Brockton, Mass.
- Incandescents, Retort for Carbonizing. C. J. Van Depoele, Chicago, Ill.
- Lamps, Carbon for Arc. F. Bain, Minneapolis, Minn.
- Railway Gates or Signals, Electrically Operating. T. A. B. Putnam, New York, N.Y.
- Telegraph Wires, System of Laying. A. J. O'Reilly, St. Louis, Mo.
- Telegraph Wires, Underground Tube for. W. Lenderoth, New York, N.Y.
- Telephone Switch. C. E. Scribner, Chicago, Ill.
- Telephone Switch. C. E. Scribner, Chicago, Ill.
- Telephonic and Telegraphic System. J. B. Barrett, Chicago, Ill.
- Telephonic System. J. P. Barrett, Chicago, Ill.

## SEPTEMBER 18TH.

- Burglar Alarm, Electric. A. Wiswall, Cincinnati, Ohio.
- Electric Cable Support or Hanger. A. J. Weaver, Providence, R.I.
- Electric Machine, Dynamo. A. Bernstein, Boston, Mass.
- Electric Machine, Dynamo. F. K. Fitch, New York, N.Y.
- Electric Machine, Dynamo. I. Gray, Medford, Mass.
- Electric Time Signaling Device. H. G. Van Wagenen, Monroe, Wis.
- Galvanic Battery. F. H. Peckham, Jr., Providence, R.I.
- Insulation of Electrical Conductors. W. J. How, Philadelphia, Pa.
- Photographer's Retouching Point. J. T. Burke, Nebraska City, Neb.
- Telegraph, Fire Alarm. E. Rogers, Brookline, Mass.
- Telephone Exchange System. J. E. Fenn, Elizabeth, N.J.
- Telephone Exchange System, Signaling Apparatus for. J. H. Cary, Boston, Mass.
- Telephone, Mechanical. W. J. Bowen, Norwalk, Ohio.
- Telephone, Mechanical. H. E. Huston, Monticello, Ill.
- Telephone Transmitter. E. Berliner, Boston, Mass.



## SEPTEMBER 25TH.

- 285,528 Electric Apparatus Regulator. C. J. Van Depoele, Chicago, Ill.  
 285,602 Electric Lighting System. M. J. Farmer, Newport, R.I.  
 285,548 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.  
 285,549 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.  
 285,691 Electric Machine, Dynamo. R. J. Sheehy, New York, N.Y.  
 285,457 Electric Machines, Armature for Dynamo. C. F. Brush, Cleveland, Ohio.  
 285,527 Electric Machines, Device for Adjusting the Brushes of Dynamo. C. J. Van Depoele, Chicago, Ill.  
 285,547 Electric Motors, Armature for. C. E. Ball, Philadelphia, Pa.  
 285,682 Gas Lighting Burner, Electric. D. Rousseau, New York, N.Y.  
 285,672 Insulating Electric Conductors, Machine for. H. O. Phillips, Waterbury, Conn.  
 285,673 Insulating Electrical Conductors. H. O. Phillips, Waterbury, Conn.  
 285,451 Lamp, Electric. E. Weston, Newark, N.J.  
 285,445 Lamp, Electric-arc. J. B. Tibbitts, Hoosic, N.Y.  
 285,715 Lamp, Electric-arc. E. Weston, Newark, N.J.  
 285,494 Railway Rails, Electrical Connection for. W. W. Le Grande, Louisville, Ky.  
 285,714 Secondary Batteries, Apparatus for Charging and Discharging. E. Weston, Newark, N.J.  
 285,529 Secondary Battery. C. J. Van Depoele, Chicago, Ill.  
 285,709 Telegraph Printing. H. Van Hoevenbergh, Elizabeth, N.J.  
 285,710 Telegraph Printing. H. Van Hoevenbergh, Elizabeth, N.J.  
 285,670 Telephone Exchanges, Duplicate Switchboard for. G. M. Phelps, Jr., Brooklyn, N.Y.  
 285,572 Telo-thermometer. C. L. Clarke, New York, N.Y.  
 285,676 Thermostat, Electrical. F. H. Prentiss and J. A. Tilden, Boston, Mass.

## OCTOBER 2ND.

- 286,100 Electric Alarms, Portable Circuit Closer for. A. Wiswall, Cincinnati, Ohio.  
 285,559 Electric Circuit Changer, Automatic. C. J. Van Depoele, Chicago, Ill.  
 286,158 Electric Cut-off. J. A. Tupper, Salt Lake City, Utah.  
 285,857 Electric Motor. C. J. Van Depoele, Chicago, Ill.  
 285,778 Electric Switch. W. Adams, St. Louis, Mo.  
 286,086 Electrical Conductor for Oil Tanks. H. W. Spang, Reading, Pa.  
 285,853 Electrical or Galvanic Currents to Beds, Couches, &c. R. Stilwell, New York, N.Y.  
 286,036 Insulated Electric Conductor. T. J. Mayall, Reading, Mass.  
 286,035 Insulation of Wires for Telegraph Lines. T. J. Mayall, Reading, Mass.  
 286,093 Lamp, Electric. C. J. Van Depoele, Chicago, Ill.  
 286,144 Lamp, Electric-arc. R. R. Moffatt, Brooklyn, N.Y.  
 286,094 Lamp, Electric-arc. C. J. Van Depoele, Chicago, Ill.  
 285,784 Lamps, Globe for Incandescent Electric. G. P. Bartlett, Woburn, Mass.  
 285,799 Magneto-electric Generator. M. S. Conly, Indianapolis, Ind.  
 285,852 Mattress, Electric Galvanic. R. Stilwell, New York, N.Y.  
 285,854 Mattress, Spread, Electric. R. Stilwell, New York, N.Y.  
 285,858 Railway, Electric. C. J. Van Depoele, Chicago, Ill.  
 285,944 Railway Signal, Automatic Electrical. D. H. Applegate, Red Bank, N.J.  
 285,807 Secondary Battery, Plant's. S. L. Fox, London, England.  
 286,107 Telegraphic Repeater. W. E. Athearn, Philadelphia, Pa.

## OCTOBER 9TH.

- 286,181 Clock, Secondary Electric. A. S. Crane, Newark, N.J.  
 286,397 Electric Conductor Post. J. A. Devlin, Philadelphia, Pa.  
 286,288 Electric Generators, Making Elements for Thermal. H. Frasch, Cleveland, Ohio.  
 286,414 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 286,416 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 286,241 Electric Machine, Dynamo. S. F. Van Choate, New York, N.Y.  
 286,242 Electric Machine, Dynamo. S. F. Van Choate, New York, N.Y.  
 286,415 Electric Machines, Armature for Dynamo. G. W. Fuller, Norwich, Conn.  
 286,247 Electric Machines, Armature for Dynamo. T. Wolcott, New York, N.Y.  
 286,325 Electric Machines, Coupling Shunt Dynamo. R. H. Mather, Windsor, Conn.  
 286,445 Electric Meter. W. S. Johnson, Whitewater, Wis.  
 286,437 Electric wire lamps, Support for. J. V. Hirley, Cincinnati, Ohio.  
 286,281 Electrical Synchronous Mechanism. P. B. Delany, New York, N.Y.  
 286,273 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,274 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,275 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,276 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,277 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,278 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,259 Electrodes for Secondary Batteries, Forming. C. F. Brush, Cleveland, Ohio.  
 286,359 Electroplating Bath and Salts, Producing an. W. H. Williams, Cincinnati, Ohio.  
 286,481 Gas Lighter, Electric. T. H. Parker, Boston, Mass.  
 286,220 Insulating Electric Conductors. H. O. Phillips, Waterbury, Conn.  
 286,350 Lamp Electrical Stand. J. H. Vail, New York, N.Y.  
 286,497 Magneto Generator of Electricity, J. P. Stabler, Sandy Spring, Md.  
 286,280 Telegraphic Apparatus. P. B. Delany, New York, N.Y.  
 286,282 Telegraphy. P. B. Delany, New York, N.Y.  
 286,279 Telegraphy, Duplex. P. B. Delany, New York, N.Y.  
 286,518 Telephone Support and Switch, Adjustable. G. A. Wilkins, Philadelphia, Pa.

## OCTOBER 16TH.

- 286,970 Annunciator and Alarm System, Combined. E. A. Sperry, Cortland, N.Y.  
 286,722 Electric Circuit Closer, Thermometric. M. Martin, Malden, Mass.  
 286,945 Electric Conductor Conduit. J. F. Martin, Chicago, Ill.  
 286,736 Electric Conductors, Making. T. Egleston, New York, N.Y.  
 286,833 Electric Currents, Apparatus for Controlling. M. Levy, Paris, France.  
 286,612 Electric Machine, Dynamo. E. J. Houston, Philadelphia, Pa.  
 286,834 Electric Regulator for Controlling the Current in Electrical Systems. M. Levy, Paris, France.  
 286,938 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,940 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,955 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,952 Electric Wires, Distributor for. J. F. Martin, Chicago, Ill.  
 286,949 Electric Wires, Distributing Box for. J. F. Martin, Chicago, Ill.  
 286,959 Electric Wires, Underground, Distributor for. J. F. Martin, Chicago, Ill.  
 286,963 Electrical Conductor. T. S. Reed, Bridgeport, Conn.



# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

Electro-magnetic Alarm. A. Wiswall, Cincinnati, Ohio.  
 Electro-magnetic Motor. S. F. Van Choate, New York, N.Y.  
 Electrotype Plate. S. S. Hoe, Tarrytown, N.Y.  
 Galvanic Battery. A. Haid, Rahway, N.J.  
 Insulator, Acoustic and Electric. W. J. Bowen, Norwalk, Ohio.  
 Insulator, Electric Wire. J. F. Martin, Chicago, Ill.  
 Insulator, Electrical Wire. J. F. Martin, Chicago, Ill.  
 Insulator for Underground Electric Conductors. J. F. Martin, Chicago, Ill.  
 Insulator for Underground Electric Conductors. J. F. Martin, Chicago, Ill.  
 Insulator for Electric Wires, Coupling for Tubular. J. F. Martin, Chicago, Ill.  
 Insulators for Electric Wires in Underground Conduits. J. F. Martin, Chicago, Ill.  
 Lamp, Electric-arc. D. J. Hauss, T. E. McNamara, J. S. Zerbe, Cincinnati, Ohio.  
 Lamp, Incandescent Electric. D. G. Fitz-Gerald, Brixton, County of Surrey, England.  
 Lamp, Voltaic-arc. O. A. Moses, New York, N.Y.  
 Non-conducting Compound. J. M. Hammill, Philadelphia, Pa.  
 Relay or Electro-magnet, Double Current. A. C. Frazer, Brooklyn, N.Y.  
 Steam Engine and Electric Generator, Combined. L. G. Woolley, Dayton, Ohio.  
 Telegraph Cable. W. T. Henley, Plaistow, County of Essex, England.  
 Telegraph, Duplex. B. Thompson, Buffalo, N.Y.  
 Telegraph, Printing. H. Van Hovenbergh, Elizabeth, N.J.  
 Telegraph, Printing. A. Wirsching, Brooklyn, N.Y.  
 Telegraph Relay. M. J. O'Sullivan, Baltimore, Md.  
 Telegraph Wires, Laying Underground. F. M. Speed, Walla Walla, Washington Territory.  
 Telephone. G. R. Shepherd, Hartford, Conn.  
 Telephone, Acoustic. B. N. Botta, Paso Robles, Cal.  
 Telephone Exchange System. G. F. Durant, St. Louis, Mo.  
 Telephone Receiver. H. E. Waite, New York, N.Y.  
 Telephone Receiver. H. E. Waite, New York, N.Y.  
 Telephone Transmitter. C. D. Haskins, New York, N.Y.  
 Telephones, Apparatus for Counterbalancing Disturbances in. A. Bernstein, Boston, Mass.

## OCTOBER 23RD.

Cane, Electric. A. & A. Roovers, New York, N.Y.  
 Carbon Filaments, Apparatus for Treating. C. G. Perkins, New York, N.Y.  
 Electric Conductor, F. Jacob, Woolwich, County of Kent, England.  
 Electric Currents, System of Generating and Distributing. C. J. Van Depoele, Chicago, Ill.  
 Electric Cut-out, Automatic. C. G. Perkins, New York, N.Y.  
 Electric Lighting System. J. A. McCoy, Fall River, Mass.  
 Electric Machine Regulator, Dynamo. C. J. Van Depoele, Chicago, Ill.  
 Electric Machines, Safety Switch for Dynamo. C. J. Van Depoele, Chicago, Ill.  
 Electric Switch and Cut-out. C. G. Perkins, New York, N.Y.  
 Electric Switchboard and Signaling Apparatus. T. W. Lane, Boston, Mass.  
 Electric Wires, Gutter, Curbstone, and Sidewalk Conduit for. E. Clark, Cornwall, N.Y.  
 Electric Transmitter. S. D. Field, New York, N.Y.  
 Incandescents, Apparatus for Carbonizing. C. G. Perkins, New York, N.Y.  
 Incandescents, Apparatus for Carbonizing. C. G. Perkins, New York, N.Y.  
 Incandescents, Apparatus for Treating. C. G. Perkins, New York, N.Y.  
 Insulating Covering for Telegraph Wires, Metallic. E. Clark, Cornwall, N.Y.  
 Insulating Material. C. J. Van Depoele, Chicago, Ill.  
 Insulator, Electric Wire. J. F. Martin, Chicago, Ill.  
 Lamp, Electric-arc. J. B. Tibbits, Hooisic, N.Y.  
 Lamp, Electric Incandescent. C. G. Perkins, New York, N.Y.  
 Lamps, Carbon Holder for Incandescent. C. G. Perkins, New York, N.Y.  
 Lamps, Clockwork for Mechanical. T. Silver, New York, N.Y.  
 Lamps, Electrode for Electric-arc. C. J. Van Depoele, Chicago, Ill.  
 Phonograph. C. C. Reynolds, Prescott, Arizona.  
 Telegraph and Transmitter therefor, Printing. S. D. Field, New York, N.Y.  
 Telegraph, Printing. S. D. Field, New York, N.Y.  
 Telephone Lines, Mechanism for Preventing Induced Currents in. J. W. Brennan & N. Rousseau, Chicago, Ill.  
 Telephone Repeater. D. Drawbaugh, Eberly's Mill, Pa.  
 Telephone Support. T. W. Lane, Boston, Mass.  
 Telephonic System. C. L. Anders, Boston, Mass.

## OCTOBER 30TH.

Burglar Alarm, Detonating. W. H. Reiff, Philadelphia, Pa.  
 Electric Alarms, Circuit Closer for. L. A. Brigel, Cincinnati, Ohio.  
 Electric Battery. A. F. DeLafield, New York, N.Y.  
 Electric Circuits, Safety Catch for. C. Goddard, New York, N.Y.  
 Electric Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electric Generator, Dynamo or Magnetic. F. Bain, Chicago, Ill.  
 Electric Lighting Systems, Indicator for. W. P. Freeman, Brooklyn, N.Y.  
 Electric Machine, Dynamo. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. J. E. Giles, Hazleton, Pa.  
 Electric Machine, Dynamo or Magneto. F. P. Nungesser, Cleveland, Ohio.  
 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine Regulator, Dynamo. G. I. Murdock, Binghamton, N.Y.  
 Electric Machine, Wiper for the Commutators of Dynamo. Alpena, Mich.  
 Electric Regulator. T. A. Edison, Menlo Park, N.J.  
 Electric Conductors, Junction for. C. Goddard, New York, N.Y.  
 Electrical Distribution, Regulator for Systems of. T. A. Edison and C. L. Clarke, Menlo Park, N.J.  
 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electrical Testing. C. J. Bradley, New York, N.Y.  
 Fire Alarm Apparatus, Electric. W. C. Gordon, England.  
 Flat Iron, Electric, R. N. Dyer, and. N. W. Seely, Menlo Park, N.J.  
 Insulated Electric Conductor. G. W. McGill, New York, N.Y.  
 Insulated Electric Conductor. H. O. Phillips, Waterbury, Conn.

- 287,519 Lamp, Incandescing Electric. T. A. Edison, Menlo Park, N.J.  
 287,520 Lamps, Incandescing Conductor for Electric. T. A. Edison, Menlo Park, N.J.  
 287,518 Lamps, Manufacturing Incandescing Electric. T. A. Edison, Menlo Park, N.J.  
 287,773 Magneto Electric Machine. P. P. Nungesser, Cleveland, Ohio.  
 287,446 Railway Signal, Electric. W. W. Le Grande, Louisville, Ky.  
 287,406 Railway Signals, Electrical Connection for. T. J. Pottenger, Louisville, Ky.  
 287,742 Telephone Receiver. H. E. Waite, New York, N.Y.  
 287,743 Telephone Receiver. H. E. Waite, and S. H. Bartlett, New York, N.Y.  
 287,710 Telephone Time Signal Repeating System. J. M. Oram, Dallas, Texas.  
 287,490 Telephone Transmitter. E. L. Wilson, Boston, Mass.  
 287,449 Telephonic Repeater and Relay. J. A. Maloney, Washington, D.C.  
 287,401 Time Detector, Electric. T. Ahearn, Ottawa, Ontario.  
 287,775 Time Lock, Electric. W. E. Peirce, Newark, N.J.

NOVEMBER 6TH.

- 287,850 Burglar Alarm, Detonating. W. Noblett, Chicago, Ill.  
 288,175 Clock Systems, Circuit and Apparatus for Electric. Jas. Hamblett, Brooklyn, N.Y.  
 287,841 Dynamometer. J. McCloskey, Boston, Mass.  
 287,890 Dynamometer, Electro Magnetic. C. F. Brackett, Princeton, N.J.  
 10,401 Electric Cables, Machine for Making. J. Farrell (Re-issue).  
 10,402 Electric Cables, Machine for Making. J. Farrell (Re-issue).  
 288,089 Electric Circuits, Station Call for. T. W. Mather, New Haven, Conn.  
 287,881 Electric Lights, etc., Tower for. C. D. F. Smith, Aurora, Ill.  
 288,042 Electric Machine, Dynamo. W. B. F. Elphenstone, and C. W. Vincent, England.  
 288,051 Electric Machine, Armature for Dynamo. J. E. Giles, Hazleton, Pa.  
 287,812 Galvanic Battery Cell. L. E. Felton, Pottsdam, N.Y.  
 287,855 Gas Engines Electric igniting Device for. L. C. Parker, Yonkers, N.Y.  
 288,002 Insulating, Carrying and Laying Electric Wire. F. W. Brown, Rochester, N.Y.  
 10,403 Insulating Compound for Electrical Conductors, and Apparatus for Compounding the same. J. B. Hyde  
 10,404 Insulating Material to Electric Wires, Apparatus for applying. J. B. Hyde (Re-issue).  
 287,830 Insulator Telegraph. C. C. Hinsdale, Cleveland, Ohio.  
 287,875 Lightning Arrestor. C. J. Shepard, Raymond, N.H.  
 287,929 Lightning-rod Coupling. W. Hewitt, London, Ontario.  
 287,957 Paper, &c., Electrical Apparatus for Controlling. J. W. Osborne, Washington, D.C.  
 288,107 Telegraph, District, Police, or Fire. F. Pearce, New York, N.Y.  
 287,914 Telegraphic Transmitter. M. H. Dement, Chicago, Ill.  
 287,873 Telephone Call Boxes, Automatic Crank Switch for. C. E. Scribner, Chicago, Ill.  
 287,896 Telephone Receiver. S. H. Bartlett & H. E. Waite, New York, N.Y.  
 288,183 Telephone Support. C. H. Ohly, Sandusky, Ohio.  
 288,017 Telephonic Transmitter. H. Clay, Philadelphia, Pa.  
 288,157 Voltaic-arc Light. W. Baxter, junr., Jersey City, N.J.

NOVEMBER 13TH.

- 288,570 Annunciator and Fire Alarm, Electric Hotel. A. T. Hess, Des Moines, Iowa.  
 288,202 Bell, Polarized Electric. W. J. Bowen, Norwalk, Ohio.  
 288,496 Clock, Electric. L. P. Schlaefli, Soleure, Switzerland.  
 288,315 Electric Currents, Apparatus for Regulating. S. Z. De Ferranti & A. Thompson, England.  
 288,393 Electric Light Circuits, Current Regulator for. C. R. Arnold, Philadelphia, Pa.  
 288,316 Electric Machine, Dynamo. S. Z. De Ferranti & A. Thompson, England.  
 288,318 Electric Machine Regulator, Dynamo or Magnetic. T. A. Edison, Menlo Park, N.J.  
 288,536 Electric Signal Box. J. C. Wilson & M. G. Davis, Boston, Mass.  
 288,555 Electric Wire Conduit. B. A. Dryer, New York, N.Y.  
 288,311 Electric Wires, Subterranean Line of. H. B. Cobb, Wilmington, Del.  
 288,310 Electric Wires, System of Laying Subterranean Lines of. H. B. Cobb, Wilmington, Del.  
 288,443 Electrical Conductor, Compound. L. Johnson, Vincennes, Ind.  
 288,566 Electrical Signal. E. Dummer, Boston, Mass.  
 288,454 Insulating Electrical Conductors. Machine for. J. Kruesi, Brooklyn, N.Y.  
 288,360 Insulator, Telegraph. S. Oakman, Melrose, Mass.  
 288,346 Lamp, Electric. E. R. Knowles, Brooklyn, N.Y.  
 288,217 Lamps, Contact for Electric. H. Edmunds, Jr., New York, N.Y.  
 288,218 Lamps, Contact for Electric. H. Edmunds, Jr., New York, N.Y.  
 288,513 Railway and Locomotive, Electric. W. M. Thomas, Cincinnati, Ohio.  
 288,215 Telephone. A. E. Dolbear, College Hill, Mass.  
 288,320 Telephone Holder and Automatic Circuit Breaker, Adjustable. W. N. Eckert, J. A. Seeley, and E. New York, N.Y.  
 288,449 Telephonic Apparatus. J. H. Kinsman, Rye, N.Y.  
 288,366 Telephonic Communication, Apparatus for. J. H. Rogers, Washington, D.C.

NOVEMBER 20TH.

- 288,623 Clocks, Actuating Device for Secondary Electric. A. S. Crane, Newark, N.J.  
 288,790 Electric Conductors, Underground Conduit for. J. E. Giles, Hazleton, Pa.  
 288,888 Electric Lighting on Railway Trains, Apparatus for. W. Stroudley, and E. J. Houghton, England.  
 288,818 Electric Machine, Dynamo. A. J. Kimball, Worcester, Mass.  
 288,629 Electric Machine, Dynamo. J. T. McTighe, Pittsburgh, Pa.  
 288,963 Electric Machine Regulator, Dynamo. J. S. Beeman, W. Taylor, and F. King, England.  
 288,830 Electric Machines, Commutator for Dynamo. T. J. McTighe, and J. T. McConnell, Pittsburgh, Pa.  
 288,629 Electrical Wires Underground, Housing and Insulation of. C. C. Gilman, Eldorado, Iowa.  
 288,916 Galvanic Battery. S. Bergman, New York, N.Y.  
 288,526 Lamp, Electric-arc. J. T. McConnell, Pittsburgh, Pa.  
 288,831 Lamp, Electric-arc. T. J. McTighe, and J. T. McConnell, Pittsburgh, Pa.  
 288,682 Lamp, Safety Cut-out for Electric. C. J. Van Depoele, Chicago, Ill.  
 288,915 Magneto-Electric Machine. J. S. Beeman, England.  
 288,795 Telegraph Cables, Apparatus for Making. A. H. Hamon, Paris, France.  
 288,786 Telegraph, Dynamo Multiple. J. D. Field, New York, N.Y.  
 288,909 Telegraph Key. H. Anderson, Peekskill, N.Y.  
 288,881 Telegraph Sounder. W. C. Smith, Philadelphia, Pa.  
 288,908 Telephone Cut-out. C. T. Wright, and C. A. Fisher, Petersburg, Ill.  
 288,835 Telephone, Mechanical. A. G. Miller, Leyden, N.Y.  
 288,621 Telephone Signaling Apparatus. J. J. Carty, Cambridge, Mass.  
 288,627 Telephone System. W. N. Eckert and J. A. Seeley, New York, N.Y.  
 288,909 Telephones, Automatic Resistance Cut-out for. D. D. Wright and C. A. Fisher, Petersburg, Ill.

## INDEX OF THE PATENT LAWS OF THE MORE IMPORTANT FOREIGN COUNTRIES,

### Information to Inventors Desirous of Obtaining Foreign Patents.

**EUROPEAN PATENTS.**—The large remuneration received by so many American inventors through foreign patents, and the favour with which American inventions are regarded by European manufacturers, should encourage every one of our countrymen, who has succeeded in obtaining the right of a patent at home, to do everything in his power to obtain protection for his invention in at least one of the most important of the European countries. Patents in Great Britain, France and Germany, if properly applied for and obtained, will secure to him the exclusive right to manufacture, sell and use his invention in territory containing a population of about one hundred and twenty-five millions; but in order to insure their absolute validity it is desirable that these should be applied for before the issue of a United States patent. There are, however, important countries where some delay is not prejudicial, but it is always desirable to take steps to secure all European patents at the earliest convenient time. The patent systems of the several European countries differ in many essential respects, not only from that of the United States, but from each other, a very wide experience, such as is seldom obtained, is necessary to the successful preparation and prosecution of applications in those countries. It is therefore very desirable for American inventors intending to apply for European patents to first secure the services and aid of such patent solicitors or attorneys in this country as are thoroughly qualified. There are many cases in which, in European countries, as much matter relating to one subject can be secured in one patent as would require two or more distinct patents in the United States, and broader protection can be obtained; but it is important in order to do this that the specification should be properly prepared and the matter properly presented. In such cases, as models are not required, it often happens that an experienced attorney may be able to secure patents in Great Britain, France and other countries, at cost for each country less than would, with cost of models, be involved in patenting the same amount of matter in the United States.

**SYNOPSIS OF THE PATENT LAWS OF THE MORE IMPORTANT FOREIGN COUNTRIES, AND STATEMENT OF THE EXPENSES OF OBTAINING PATENTS THEREIN.**—The order in which the several countries are here arranged is that of the generally estimated importance of their several patents. The expenses stated are given in United States currency, and embrace Government fees and the whole of the agency fees.

**GREAT BRITAIN.**—The British patent covers the United Kingdom of Great Britain and Ireland, the Channel Islands and the Isle of Man, containing a population of about forty millions, but does not extend to the colonies; each British colony making and administering its own patent laws. The patent is granted for fourteen years, and may be obtained by the inventor or his assignee, and in some cases by the first introducer. The British law neither compels the patentee to work or manufacture the subject of the patent within any specified time, nor forbids the importation of patented articles. The total cost of obtaining a British patent is \$26, which is required in advance; the balance, \$52, being payable in three and one-half months. At the expiration of three and seven years, respectively, there are taxes to be paid, or the patent will become void. These taxes would be paid by the purchaser if the patent should be sold. For summary of the New Law which comes into force Jan. 1, 1884, see *Patents*.

**FRANCE.**—French patents are granted to inventors or their representatives, the term being always ten years. All the French colonies are also covered by the patent. The total population of France and its colonies is about forty-five millions. The patent must be worked in France within two years, and its working must not cease for a period of two years. The patentee must not import for sale or commercial use any articles covered by his patent, but may, by obtaining a permit, import a sample or model. The usual expense of a French patent is \$100, payable in advance. There is also a small tax payable at the end of every year to keep the patent valid.

**THE GERMAN EMPIRE.**—The new law of 1877, providing for the protection of inventors throughout the whole of the Empire of Germany by a single patent, is of the very greatest importance to American inventors. This patent, which is granted for the term of fifteen years, covers kingdoms and states in



which, until recently, no less than twenty-three separate patents were necessary for complete protection and in many of which, as in Prussia, Bavaria, Saxony, Würtemberg, and Alsace-Lorraine, are some of the most important industries in Europe. These kingdoms and states contain in the aggregate a population of about forty-three millions, which is greater than that of any European state except Russia. A valid German patent may be obtained by the inventor or his representative, under some circumstances by the introducer. The total cost of obtaining it is \$80, payable in advance. There is an annual tax, the amount of which is progressive, but is trifling for the earlier years. There is a delay allowed for putting the invention in operation.

**BELGIUM.**—This is one of the most actively manufacturing nations in the world. Its industry of every kind, and large exportations are made to other countries. Though territorially small, containing a population of only about five millions, it is one of the most important countries in Europe to secure a patent. Patents are granted generally for fifteen years, to inventors or their representatives at a total expense of \$80, payable in advance. A yearly tax, very small at first, but increasing in every year, is also payable to keep the patent in force. The patented invention must be worked one year after its having been commercially worked in any other country, but this time can generally be extended on application.

**AUSTRIA AND HUNGARY.**—Patents for the Austrian empire, which also include the kingdom of Hungary, with a total population of nearly forty millions, are granted for any term demanded, from one to fifteen years. If granted for less than the longest term, the patent may be easily extended as desired till it has run the full time. The law requires the invention to be worked in the empire one year. The importation of patented articles is allowed.

The government charges are in proportion to the length of the term. The cost for one year is \$115, but it is better to take it for two years at a cost of \$115, which is payable in advance.

**RUSSIA.**—Patents of invention are granted in Russia to any applicant for three, five or ten years. The invention should be worked in the empire within the first quarter of the term of the grant. Although it is not necessary that the applicant should be the inventor, a patent obtained by any other person than the inventor could be invalidated if the inventor should afterwards set up a claim. No restriction is placed upon importation by the patentee. The whole expense of a Russian patent for three years is \$350; for five years, \$350; and for ten years \$600—in advance.

**SPAIN, CUBA, &c.**—Under the new law which came into operation on August 1st, 1878, a patent includes all the colonies of Spain, including Cuba, Porto-Rico, and the Philippine Islands. Patents are granted in most cases for twenty years, and can be obtained at a cost not commonly exceeding \$100, including government and agency fees, which is less than a quarter of the sum heretofore charged by American patent attorneys for a ten years patent for Cuba alone. The patent must be worked within two years. An annual tax, very small at first, but progressively increasing, is required to keep the patent in force. This Spanish law is one of the best in Europe, the penalties for infringement of a patent are very severe, including the confiscation to the patentee of all infringing articles, and, in some cases, fines and imprisonment. A great industrial revival has lately taken place in Spain, and we recommend all inventors who have valuable inventions to secure them in this country.

**ITALY.**—Patents in Italy may be obtained for any number of years, from one to fifteen, at the option of the applicant, and can be extended from shorter terms to the full term. Those patents granted for terms not exceeding five years must be worked within the first year. Those granted for longer terms are allowed two years' delay for working. The importation of patented articles by the patentee is permitted. The Italian patent covers the states recently annexed. The cost of the patent depends upon the length of the term. The Government taxes are of two kinds—namely, one proportional to the length of the term, and payable in advance; the other payable in the form of an annuity. To secure the greatest benefit by the smallest advance payment, the patent is commonly first taken for six years. The total cost for obtaining the patent for this term is \$150, payable in advance. This sum embraces the whole of the tax for that term, and one year's annuity.

**PORTUGAL.**—Patents of invention are granted for five, ten, or fifteen years, as may be desired by the inventors only, or their legal representatives; the total expense for Government and agency fees for five years \$175, for ten years \$225, for fifteen years \$275. The invention must be worked within the first half of the term for which the patent is granted.

**SWEDEN.**—The patent is granted only to the inventor or his legal representatives. The term of the grant is fixed by the Government according to the supposed or estimated importance of the invention, never exceeding fifteen years. The invention must generally be worked within two years. The total cost is \$125.



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**NEWAY.**—The inventor, his attorney, or assignee, and in some cases an importer, can obtain a patent term not exceeding ten years. Two years' delay is generally allowed for working the patent. Total cost \$120.

**REMARK.**—Patents are granted to inventors or their legal representatives for from five to twenty years as determined by government in each case. Patents to mere *introducers* are granted for five years. Must be worked within one year. Total cost \$125.

**BRITISH COLONIES.—CANADA.**—In this colony patents are granted to inventors, or their legal representatives only, and can be obtained for five, ten, or fifteen years as demanded. The government fees are \$20 gold for each five years. To save first cost it is customary to apply for the patent at first for five years only. The total amount of government and agency fees for this term is \$50. The cost of extension is trifling in addition to the additional government fee. The patent must be applied for within one year after the date of the United States, or any previously granted patent, and must be worked in Canada within two years.

**BRITISH INDIA.**—Patents are granted only to inventors and their legal representatives for fourteen years. The application should be made before the invention is in public use either in India or in Great Britain. The cost is \$300.

**AUSTRALIA.**—Six different colonies having separate governments are embraced in what is commonly known as Australia, and a separate patent is required for each. The patents are granted for fourteen years to inventors or their legal representatives, and in some cases to introducers. The costs for government and agency fees for the grants of the patents in the several colonies are as follows:—

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**NEW ZEALAND.**—What are called patents in this colony are only granted to inventors who have not previously taken patents anywhere else. Letters of Registration are granted to *bona fide* holders of patents here, whether inventors or assignees. These letters have the same force as patents. Total cost \$250.

**PORT OF GOOD HOPE.**—The patent is granted to the inventor or his legal representative for fourteen years. Total cost \$200.

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# AMERICAN

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 ett C. W. & Co. manufacturing chemists, 110 S. Charles st. Baltimore, Md.  
 ett Walter S. steam engine maker, 132 N. 3rd st. Philadelphia, Pa.  
 asis J. S. & Co. india rubber and gutta percha manufacturers and dealers, 41 Beaver st. New York  
 and 140 Congress st. Boston, Mass.  
 smethy J. P. electrician, Supt. Tel. Cleveland, O.  
 mson & Bacon, chemists, 717 Clay st. San Francisco, Cal.  
 rman Bros. platers, 123 Kearny st. San Francisco, Cal.  
 as & Carter, mechanical engineers, 109 California st. San Francisco, Cal.  
 as J. R. & Co. railroad supplies, 109 N. 3rd st. St. Louis, Mo.  
 as\* Nickle Plating & Manufacturing Co. general platers, S. Windham, Con.  
 as Thomas B. & Co. belting manufacturers, 31 Federal st. 176 Devonshire st. and 121 Haverhill st.  
 Boston, Mass.  
 as & Westlake Manufacturing Co. (S. R. Atwood, manager) railroad supplies, 45 Summer st.  
 Boston, Mass.  
 as John F. railroad supplies, 55 Pine st. New York.  
 as Jos. H. patent solicitor, 33 School st. Boston, Mass.  
 as Wellington M. D. medical electrician, 2210 Wabash av. Chicago, Ills.  
 ack, patent solicitor, 69 Honore bldg. Chicago, Ills.  
 as J. H. patent solicitor, 931 F st. Washington, D.C.  
 ew T. J. electrician, Philadelphia, Pa.  
 trom Oscar G. electrical instrument manufacturer, 162 William st. New York.  
 an Edmund, electro plater, Concord, N.H.  
 y A. L., electrician, Cleveland, O.  
 an Brush Electric Light and Power Co. Akron, O.  
 ay Aniline & Chemical Co. Albany, N.Y.  
 ay Electric Illuminating Co. 71 Trinity pl. Albany, N.Y.  
 ay N. P. Co. general platers, cor. Pearl and Pleasant sts. St. Louis, Mo.  
 any, Troy and Sand Lake R. R. & Telegraph Co. 120 Broadway, New York.  
 erton D. T. railroad supplies, 95 Liberty st. New York.  
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| Knowles William .. .. .                                   | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| <i>La América</i> (E. Valiente & Co.)                     | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Iamson John S. & Bro. .. ..                               | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Leclanché Battery Co. .. ..                               | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Longstreet J. H. .. .. .                                  | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
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| Moore Alfred F. .. .. .                                   | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
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| Northrop A. C. .. .. .                                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Paine & Ladd .. .. .                                      | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Palmer Wire Co. .. .. .                                   | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Phosphor Bronze Smelting Co. Limited.                     | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pinkham & Seal .. .. .                                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Raynor, H. M. .. .. .                                     | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Redding Jerome & Co. .. ..                                | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Ripley H. C. .. .. .                                      | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Sabine John B. .. .. .                                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Schleicher Schumm & Co. .. ..                             | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| <i>Science and Progress</i> (J. C. Adams, publisher)      | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Standard Electrical Works .. ..                           | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Swan Incandescent Electric Light Co.                      | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
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| Tillotson L. G. & Co. .. ..                               | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Time Telegraph Co. .. .. .                                | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Union Electric Manufacturing Co. ..                       | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| United States Electric Lighting Co. ..                    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Utica Fire Alarm Telegraph Co. ..                         | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Viaduct Manufacturing Co. .. ..                           | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Western Electric Co. .. .. .                              | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |



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Aurora Silver Plate Manufacturing Co. electro platers, Aurora, Ills.  
 Austin Amory, chemist, 82 Walter st. Boston, Mass.  
 Automatic Boiler & Engine Co. steam engine makers, New Haven, Conn.  
 Automatic Fire Alarm Co. 52 Kilby st. Boston, Mass.  
 Automatic Gas Lamp & Lighting Co. electrolier and chandelier manufacturers, 59 Cedar st. New York  
 Automatic Signal Telegraph Co. electric alarm manufacturers, 294 Broadway, New York and  
 Franklin st. Boston, Mass.  
 Averill H. K. telegraph engineer, Plattsburg, N.Y.  
 Avery C. E. chemist, 76 State st. Boston, Mass.  
 Avery Dr. Elroy M. electrician, Electrician and Expert Brush Electric Association, 404 Mar  
 St. Louis, Mo.  
 Avery J. W. lathe manufacturer, Phoenix, Warwick, R.I.  
 Axthelia Ernest, electric annunciators and call bells, 103 3rd av. Pittsburgh, Pa.  
 Ayres A. W. general plater, Northampton, Mass.

## B.

Baader & Weber, electricians, 242 Broome st. New York.  
 Babcock & Fernald, railroad supplies, Sedalia, Missouri.  
 Babcock & Wilcox, mechanical engineers, 30 Cortlandt st. New York.  
 Babcock James A. electro plater, 17 John st, New York.  
 Babcock James F. analytical chemist, 4 State st. Boston, Mass.  
 Babcock S. E. telegraph engineer, Troy, N.Y.  
 Babcock W. H. patent solicitor, 513 7th st. Washington, D.C.  
 BACKUS WATER MOTOR CO. turbine and water wheel makers, Hamilton st. and N.J.R.R.  
 Newark, N.J.  
 Backus J. asbestos materials manufacturer, 446 Cherry st. New York.  
 Bacon F. W. mechanical engineer, 33 Broomfield st. Boston, Mass.  
 Badger Bros. steam engine makers, W. 2nd st. Quincey, Mass.  
 Badger E. B. & Son, galvanizers, 63 & 65 Pitt st. Boston, Mass.  
 Badger L. M. electro plater, Elmira, N.Y.  
 Baerenklau Gustav A. coppersmith, 172 Forsyth st. New York.  
 Baetz William, chemical apparatus manufacturer, 96 Fulton st. New York.  
 Bagger L. & Co. patent solicitors, 802 F st. Washington, D.C.  
 BAHN & ZAHN electrical instruments, batteries, annunciators, bells, and supplies, 108 Libe  
 New York.  
 Bailey, Eachus & Shoe, nickel platers, 428 Walnut st. Philadelphia, Pa.  
 BAILEY THEO. P. electrical engineer and electrical supplies, 203 Van Buren st. Chicago, Ills.  
 Bailey D. A. B. electro plater, Potsdam, N.Y.  
 Bain Force, electrician, 721 Hennepin avenue, Minneapolis, Minn.  
 Baird H. C. & Co. publishers of scientific books, 110 Walnut st. Philadelphia, Pa.  
 Baker Brass Co. brass and copper manufacturers, 11 Light st. & 62 Cedar st. New York.  
 Baker & Co. platinum importers, 408 N. J. R. R. av. Newark, N.J.  
 Baker & Feudbner, electro platers, 147 Mulberry st. New York.  
 Baker A. L. steam engine maker, Geneva, N.Y.  
 Baker C. F. electro plater, Hartford, Conn.  
 Baker G. E. electrician, 195 Broadway, New York.  
 Baker G. T. general plater, 327 Main st. Buffalo, N.Y.  
 Baker Hayden M. manufacturing chemist, 402 Washington st. New York.  
 Baker J. electric toys, 333 Washington st. Boston, Mass.  
 Baker J. N. electrician, Topeka, Kansas.  
 Baker W. T. chemist, 19th c. Oxford st. Philadelphia, Pa.  
 Bakewell & Kerr, patent solicitors, 57 Grant st. Pittsburgh, Pa.  
 Balderston H. & Son, wire manufacturers, 66 G. Calvert st. Baltimore, Md.  
 Baldwin, Hopkins & Payton, patent solicitors, 25 Grant place, Washington, D.C.  
 Baldwin L. S. & Co. burglar alarms manufacturers, 75 Madison st. Chicago, Ills.  
 Baldwin A. A. electrician, Ionia, Mich.  
 Ball C. E. electrical engineer, N.E. cor. 22nd st. and 2nd av. New York.  
 Ball C. M. electrician, Troy, N. Y.  
 Ball C. S. jr. electro plater, Syracuse, N.Y.  
 Ballerian J. & Co. glass manufacturers, 13 Baxter st. New York.  
 Balliet A. H. patent solicitor, Hoboken, N.J.

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## SEPTEMBER 25TH.

- 285,528 Electric Apparatus Regulator. C. J. Van Depoele, Chicago, Ill.  
 285,602 Electric Lighting System. M. J. Farmer, Newport, R.I.  
 285,548 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.  
 285,549 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.  
 285,691 Electric Machine, Dynamo. R. J. Sheehy, New York, N.Y.  
 285,457 Electric Machines, Armature for Dynamo. C. F. Brush, Cleveland, Ohio.  
 285,527 Electric Machines, Device for Adjusting the Brushes of Dynamo. C. J. Van Depoele, Chicago, Ill.  
 285,547 Electric Motors, Armature for. C. E. Ball, Philadelphia, Pa.  
 285,682 Gas Lighting Burner, Electric. D. Rousseau, New York, N.Y.  
 285,672 Insulating Electric Conductors, Machine for. H. O. Phillips, Waterbury, Conn.  
 285,673 Insulating Electrical Conductors. H. O. Phillips, Waterbury, Conn.  
 285,451 Lamp, Electric. E. Weston, Newark, N.J.  
 285,445 Lamp, Electric-arc. J. B. Tibbits, Hoosie, N.Y.  
 285,715 Lamp, Electric-arc. E. Weston, Newark, N.J.  
 285,494 Railway Rails, Electrical Connection for. W. W. Le Grande, Louisville, Ky.  
 285,714 Secondary Batteries, Apparatus for Charging and Discharging. E. Weston, Newark, N.J.  
 285,529 Secondary Battery. C. J. Van Depoele, Chicago, Ill.  
 285,709 Telegraph Printing. H. Van Hoevenbergh, Elizabeth, N.J.  
 285,710 Telegraph Printing. H. Van Hoevenbergh, Elizabeth, N.J.  
 285,670 Telephone Exchanges, Duplicate Switchboard for. G. M. Phelps, Jr., Brooklyn, N.Y.  
 285,572 Tele-thermometer. C. L. Clarke, New York, N.Y.  
 285,676 Thermostat, Electrical. F. H. Prentiss and J. A. Tilden, Boston, Mass.

## OCTOBER 2ND.

- 286,100 Electric Alarms, Portable Circuit Closer for. A. Wiswall, Cincinnati, Ohio.  
 285,859 Electric Circuit Changer, Automatic. C. J. Van Depoele, Chicago, Ill.  
 286,158 Electric Cut-off. J. A. Tupper, Salt Lake City, Utah.  
 285,857 Electric Motor. C. J. Van Depoele, Chicago, Ill.  
 285,778 Electric Switch. W. Adams, St. Louis, Mo.  
 286,086 Electrical Conductor for Oil Tanks. H. W. Spang, Reading, Pa.  
 285,853 Electrical or Galvanic Currents to Beds, Couches, &c. R. Stilwell, New York, N.Y.  
 286,036 Insulated Electric Conductor. T. J. Mayall, Reading, Mass.  
 286,035 Insulation of Wires for Telegraph Lines. T. J. Mayall, Reading, Mass.  
 286,093 Lamp, Electric. C. J. Van Depoele, Chicago, Ill.  
 286,144 Lamp, Electric-arc. R. R. Moffatt, Brooklyn, N.Y.  
 286,094 Lamp, Electric-arc. C. J. Van Depoele, Chicago, Ill.  
 285,784 Lamps, Globe for Incandescent Electric. G. P. Bartlett, Woburn, Mass.  
 285,799 Magneto-electric Generator. M. S. Conly, Indianapolis, Ind.  
 285,852 Mattress, Electric Galvanic. R. Stilwell, New York, N.Y.  
 285,854 Mattress, Spread, Electric. R. Stilwell, New York, N.Y.  
 285,858 Railway, Electric. C. J. Van Depoele, Chicago, Ill.  
 285,944 Railway Signal, Automatic Electrical. D. H. Applegate, Red Bank, N.J.  
 285,807 Secondary Battery, Plant's. S. L. Fox, London, England.  
 286,107 Telegraphic Repeater. W. E. Athearn, Philadelphia, Pa.

## OCTOBER 9TH.

- 286,181 Clock, Secondary Electric. A. S. Crane, Newark, N.J.  
 286,397 Electric Conductor Post. J. A. Devlin, Philadelphia, Pa.  
 286,298 Electric Generators, Making Elements for Thermal. H. Frasch, Cleveland, Ohio.  
 286,414 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 286,416 Electric Machine, Dynamo. G. W. Fuller, Norwich, Conn.  
 286,241 Electric Machine, Dynamo. S. F. Van Choate, New York, N.Y.  
 286,242 Electric Machine, Dynamo. S. F. Van Choate, New York, N.Y.  
 286,415 Electric Machines, Armature for Dynamo. G. W. Fuller, Norwich, Conn.  
 286,247 Electric Machines, Armature for Dynamo. T. Wolcott, New York, N.Y.  
 286,325 Electric Machines, Coupling Shunt Dynamo. R. H. Mather, Windsor, Conn.  
 286,445 Electric Meter. W. S. Johnson, Whitewater, Wis.  
 286,437 Electric wire lamps, Support for. J. V. Hixley, Cincinnati, Ohio.  
 286,281 Electrical Synchronous Mechanism. P. B. Delany, New York, N.Y.  
 286,273 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,274 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,275 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,276 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,277 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,278 Electrical Synchronous Movement. P. B. Delany, New York, N.Y.  
 286,259 Electrodes for Secondary Batteries, Forming. C. F. Brush, Cleveland, Ohio.  
 286,309 Electroplating Bath and Salts, Producing an. W. H. Williams, Cincinnati, Ohio.  
 286,481 Gas Lighter, Electric. T. H. Parker, Boston, Mass.  
 286,220 Insulating Electric Conductors. H. O. Phillips, Waterbury, Conn.  
 286,350 Lamp Electrical Stand. J. H. Vail, New York, N.Y.  
 286,497 Magneto Generator of Electricity, J. P. Stabler, Sandy Spring, Md.  
 286,280 Telegraphic Apparatus. P. B. Delany, New York, N.Y.  
 286,282 Telegraphy. P. B. Delany, New York, N.Y.  
 286,279 Telegraphy, Duplex. P. B. Delany, New York, N.Y.  
 286,518 Telephone Support and Switch, Adjustable. G. A. Wilkins, Philadelphia, Pa.

## OCTOBER 16TH.

- 286,970 Annunciator and Alarm System, Combined. E. A. Sperry, Cortland, N.Y.  
 286,722 Electric Circuit Closer, Thermometric. M. Martin, Malden, Mass.  
 286,945 Electric Conductor Conduit. J. F. Martin, Chicago, Ill.  
 286,706 Electric Conductors, Making. T. Egleston, New York, N.Y.  
 286,803 Electric Currents, Apparatus for Controlling. M. Levy, Paris, France.  
 286,612 Electric Machine, Dynamo. E. J. Houston, Philadelphia, Pa.  
 286,834 Electric Regulator for Controlling the Current in Electrical Systems. M. Levy, Paris, France.  
 286,908 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,940 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,956 Electric Wire Conduit. J. F. Martin, Chicago, Ill.  
 286,952 Electric Wires, Distributor for. J. F. Martin, Chicago, Ill.  
 286,949 Electric Wires, Distributing Box for. J. F. Martin, Chicago, Ill.  
 286,939 Electric Wires, Underground, Distributor for. J. F. Martin, Chicago, Ill.  
 286,963 Electrical Conductor. T. S. Reed, Bridgeport, Conn.



## A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

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 E. M. Manufacturing Co. steam engine makers, Auburn, N.Y.  
 C. mechanical engineer, Belvidere, Ia.  
 J. submarine telegraph engineer, Rochester, N.Y.  
 & Deetjeen, coppersmiths, 210 South st. New York.  
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 HOP, VICTOR & CO. importers of platinum wire and foil, 33 Maiden lane, New York. *See index to advertisers.*  
 Wm. E. architect, 4 W 9th st. New York.  
 R. R. Station Indicator Co. railroad supplies, Hartford, Conn.  
 S. P. & Co. railroad supplies, 370 Atlantic av. Boston, Mass.  
 Ebenezer, electrolier and chandelier manufacturer, 93 Maiden la. New York.  
 E. G. & Co. iron pipe manufacturers, 80 Centre st. New York.  
 Plating & Paper Co. electrotypers, Toledo, O.  
 Emile V. brass finisher, 109 Wooster st. New York.  
 Jno. H. mechanical engineer, 106 Liberty st. New York.  
 Wm. & Co. copper manufacturers, cor. Brighton and Allen sts. Boston, Mass.  
 C. W. electro plater, 27 N. Charles st. Baltimore, Md.  
 Geo. F. Manufacturing Co. railroad supplies, 114 Washington st. Boston, Mass.  
 Edward, electrician, 195 Broadway, New York.  
 C. C. chemists, 116 Front st. San Francisco, Cal.  
 J. & Son railroad supplies, 215 Church st. Philadelphia, Pa.  
 Richard Light & Power Co. corner Quay and West sts. Brooklyn, N.Y. & Union sq. New York City.  
 W. mechanical engineer, 195 B'way, New York.  
 H. manufacturing chemist, 81 4th av. Philadelphia, Pa.  
 H. & F. steam engine manufacturers, 55 S. Canal st. Chicago, Ills.  
 C. W. jr. electrotypist, 8 N Anderson st. Boston, Mass.  
 & Adam, electrical instrument manufacturer, 220 N 4th st. St. Louis, Mo.  
 G. H. electrician, Pittsfield, Mass.  
 & Osborne, electrical instrument manufacturers, 23-25 N. J. R. R. Av. Newark, N.J.  
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Patent Office News, Howe & Nicholas, editors and publishers, 621 E. st. N.W. Washington, D.C.  
Patent Soliciting & Litigation National Scientific Association, Chicago, Ill. and Washington, D.C.  
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Yeung G. G. steam engine maker, 42 Cortlandt st. New York.  
Yeung J. S. steam engine manufacturer, 31 Parkway av. Pittsburgh, Pa.  
Yeung Samuel, electrician, Lowell, Mass.  
Yull James, electrician, Winnipeg, Manitoba.

**Z.**

Zackerle A. E. patent solicitor, 1837 Frankfort av. Philadelphia. Pa.  
Zano Joseph & Co. brass finishers, 81 Sudbury st. Boston, Mass.  
Zante D. general plater, 190 Jessie st. San Francisco, Cal.  
Zeese A. & Co. electrotypers, 157 Dearborn st. Chicago, Ills.  
Zeltmacher Adolph, medical and galvanic belts, 84 Duane st. New York.  
Zettner & Wright, platers, St. Joseph, Miss.  
Zeuschner E. electrical instrument manufacturer, 187 Vine st. Cincinnati, Ohio.  
Zimdars C. E. electric bell manufacturer (pneumatic call), 160 W 27th st. New York.  
Zimmerman Chas. coppersmith, 189 E. Houston st. New York.  
Zimmermann W. patent solicitor, 43 Borden bldgs. Chicago, Ills.  
Zinn & Messer, brass and copper founders, 83 Centre st. New York.  
Zucker & Levett Chemical Co. dynamo and magneto electric machine manufacturers, 540 W 14<sup>th</sup> New York.  
Zuckschwerdt & Co. burglar and fire alarm manufacturers, 106 St. Mark's pl. New York.

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# AMERICAN CLASSIFIED TRADES.

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## **accumulators of Electricity.**

*F.—Accumulateurs d'Electricité.*

*G.—Electrische Accumulatoren.*

Electric Storage Co. 792 Broad st.  
N.J.

SWAN ELECTRIC LIGHT CO.  
Broadway, cor. 14th st. New York, *see*  
*advertisers.*

ELECTRIC CO. (Parent Co.) 379  
W. Cleveland, O. *see index to advertisers.*

E. Washington, D.C.

Proal, rooms 29 & 31, Chamber com-  
bldgs. Baltimore, Md.

Storage & Light Co. 95 Milk st. Boston,

Accumulator Co. (Parrish & Pendle-  
& 80 Broadway, New York.

N JAMES F. Inventors' institute,  
Union, New York.

Electric Storage & Light Co. 234 Broad-  
way New York.

J. S. 237 Broadway, New York.

Force Co. 234 Broadway, New York.

Electric Lighting Co. 234 Broadway,  
New York.

## **Acid Manufacturers.**

*F.—Acides (Fab. de).*

*G.—Säure-Fabrikanten.*

P. & Co. 75 & 77 River st. Pawtucket  
New Greenwich, R.I.

ELD CHEMICAL WORKS, 159 Front  
New York, New Haven & Bridgeport, Conn.

Allen, 182 Water st. New York.

Chemical Works (James Riley & Sons),  
Providence, R.I.

Acid Manufacturing Co. 70 Weybossett,  
Providence, R.I.

Chem. Martin & Sons, 55 Fulton st.  
New York.

James L. & Co. 47 Fulton st. New York.

Acid Co. 159 Front st. New York & New  
Haven, Conn.

Weightman, 56 Maiden la. New York

8 N 9th st. Philadelphia, Pa.

Acid Co., Bennington, Vt.

## **Acid Manufacturers—continued.**

Standard Chemical Works (Houghton and  
Wiemarth) Stamford, Vt.

Swift W. H. 117 Milk st. Boston, Mass.

Talbot C. P. City Market House, Lowell, Mass.

Taylor & Barker, 3 Boston and Maine Depot,  
Lowell, Mass.

Wells, Orson & Son, North Adams, Mass.

## **Acoustic, or Private Line Telephones.**

*F.—*

*G.—*

ELGIN TELEPHONE CO., ELGIN, (Kane  
Co.) ILLS. William Hubbard, Patentee; Elgin  
Telephone for private use.

HARBERT EDW. E. & CO. 159 La Salle st.  
Chicago, Ills.

HOLCOMBE J. R. & CO. Atwater bldgs.  
Cleveland, O.

## **Agencies for the Sale of Patents.**

*F.—Brevets et Marques de fabrique (Agents de).*

*G.—Agenten zum Registriren der Patente, &c.*

Calmore & Co. 501 Chestnut st. Philadelphia, Pa.

Chamberlin & Co. 735 Broadway, New York,  
Philadelphia and Chicago, Ills.

Globe Patent Agency, 34 Park Row, New York.

Hazelton & Gilman, room c, 178 Devonshire st.  
Boston, Mass.

Inventors' Institute, 28 Cooper Union, New  
York.

Knudson Electric Co. 39 Nassau st. New York.

Manhattan Agency, 733 Broadway, New York.

Patterson, Jno. M. 91 Grant st. Pittsburgh, Pa.

## **Architects.**

*F.—Architectes.*

*G.—*

Barrett James, 4 New Chambers st. New York.

Beir Theo. J. 215 Bowery New York.

Berger Richard 110 Leonard st. New York.

Bishop Wm. E. 4 W 9th st. New York.

Bobb, Cook & Willard, 55 Broadway, New York.

Breeze James L. 121 E 23rd st. New York.

**Architects—continued.**

Breuer, 1207 Broadway, New York.  
 Budlong Geo. H. 116 Pearl st. New York.  
 Cady J. C. & Co. 111 Broadway, New York.  
 Camp Fredk. T. 1242 3rd av. New York.  
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 Clevedon & Putzel, 2233 3rd av. New York.  
 Clinton Chas. W. 18 Broadway, New York.  
 Colos Frederick H. 66½ Pine st. New York.  
 Congdon Henry M. 711 Broadway, New York.  
 Cook Walter 57 Broadway, New York.  
 Cordes A. W. 225 E 27th st. New York.  
 Croff Gilbert B. 335 Broadway, New York.  
 Crooks Arthur 32 Park pl. New York.  
 Curtiss Saml. 265 Broadway, New York.  
 Cutter Manly N. 47 Lafayette pl. New York.  
 Dacunya George W. 111 Broadway, New York.  
 Davison Darius, 19 Park pl. New York.  
 Diaper Frederic, 49 Wall st. New York.  
 Dinkelberg Frederick P. 18 Broadway, New York.  
 D'Oench Albert F. 16 Exchange pl. New York.  
 D'Orsay J. Stanley & Co. 67 Bible house, New York.  
 Duckworth & Dimham, 291 Broadway, New York.  
 Dudley Henry J. 1193 Broadway, New York.  
 Dunham Alfred A. 291 Broadway, New York.  
 Dunn Joseph M. 1193 Broadway, New York.  
 Eidlitz Cyrus L. W. 128 Broadway, New York.  
 Eidlitz Leopold, 128 Broadway, New York.  
 Farmer Henry 18 Broadway, New York.  
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 Fernbach Henry 346 Broadway, New York.  
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 Formachon Maurice, 154 Nassau st. New York.  
 Forster John M. 407 W 40th st. New York.  
 Foster Nathaniel G. 83 Cedar st. New York.  
 Franklin John B. 115 Waverley pl. New York.  
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 Fuller George A. 2 Wall st. New York.  
 Gandolfo Emanuel 31 Union sq. New York.  
 Gardiner Wm. W. 1364 Washington av.  
 New York.  
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 cisco, Cal.  
 Gilbert & Thompson, 51 New st. New York.  
 Gilbert Bradford L. 187 West st. New York.  
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 Harney Geo. E. 149 Broadway, New York.  
 Harrison Henry G. 67 William st. New York.  
 Harrison John F. 231 Broadway, New York.  
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 Hatfield O. P. & R. F. 31 Pine st. New York.

**Architects—continued.**

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 Hoffmann Jobst. 153 4th av. New York.  
 Holly H. Hudson, 111 Broadway, New York.  
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 Kerby & Archer, 191 Broadway, New York.  
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 Kimbell & Wisdell, 824 Broadway, New York.  
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 Kuhles William, 111 Broadway, New York.  
 Lamb & Rich, 486 Broadway, New York.  
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 Lederle & Co. 196 Broadway, New York.  
 Lennan Detlef, 111 Broadway, New York.  
 Lindsey Edward D. 32 Liberty st. New York.  
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 o. D. 149 Broadway, New York.  
 B. 245 Broadway, New York.  
 is A. 32 Park pl. New York.  
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 an F. 264 W. 46th st. New York.  
 V. 29 Nassau st. New York.  
 eze L. 155 Broadway, New York.  
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 jr. 178 E. 125th st. New York.  
 115 Nassau st. New York.  
 rt E. 115 Nassau st. New York.  
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 ight 149 Broadway, New York.  
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 . 116 Canal st. New York.  
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 Thorn Fredk. G. 115 Broadway, New York.  
 Thorp Alfred H. 31 Union sq. New York.  
 Townley Wm. E. jr. 32 Park pl. New York.  
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 Tuthill William B. 52 Broadway, New York.  
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 Vaux & Radford, 71 Broadway, New York.  
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 Wightman, Jas. S. 2279 3rd av. New York.  
 Willard Daniel W. 55 Broadway, New York.  
 Wilson Bros. & Co. 115 Broadway, New York.  
 Wilson Robert, 82 Nassau st. New York.  
 Withers Fredk. C. Bible house, New York.  
 Wolfe Christopher, 111 Broadway, New York.  
 Wood John A. 240 Broadway, New York.  
 Wood William Halsey, 57 Broadway, New York.

### Asbestos Manufacturers.

*F.—Amiante (Fab. d').*

*G.—Asbest-Fabrikanten.*

Asbestos Packing Co. 169 Congress st. Boston,  
 Mass.  
 Asbestos Felting Co., 1 Pemberton square, Boston.  
 Mass.  
 Asbestos Felting Works, 108, Liberty st. New  
 York.  
 Asbestos Patent Fibre Co. 369 W. 11th st. New  
 York.  
 Backus J. 446 Cherry st. New York.  
 Bartlett F. L. Portland, Maine.  
 Bowker, H. L. & Co. 295 and 297 Franklin st.  
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 Boyd J. 428 Market st. Philadelphia, Pa.

**Asbestos Manufacturers—continued.**

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 Chalmers, Spence, & Co. 23 John & fnt. E. 9th st. New York.  
 Gilmour R. M. 82 John st. New York.  
 Johns H. W. Mfg. Co. 87 Maiden lane, New York.  
 McLaughlin Geo. T. & Co. 120 Fulton st. Boston, Mass.  
 Pyrolusite Manganese Co. 54 Cliff st. New York. E. H. Woodward, Secretary.  
 Reed J. L. 416 Arch st. Philadelphia, Pa.  
 Trainor Chas. W. & Co. 148 and 150, Oliver st. Boston, Mass.  
 Van Orden Edw. & Co. 72 Maiden la. New York.

**Automatic Electric Signalling  
 Apparatus Makers.**

F.—  
 G.—

Shuey W. H. room 30 Cooper Union, New York.

**Battery Manufacturers.**

F.—*Piles Electriques (Fab. de).*  
 G.—*Electriche Batterien.*

Ahlstrom O. G. 162 William st. New York.  
 Bahr & Zahn, 108 Liberty st. New York.  
 Berge J. and H. (medical) 191 Greenwich and 95 Fulton sts. New York.  
 Boston Electric Co. 550 Washington st. Boston, Mass.  
 Waring Wm. E. 116 Canal st. New York.  
 BRUSH ELECTRIC CO. (PARENT CO.) 379 Euclid av. Cleveland, O. Storage Batteries, *see index to advertisers.*  
 Codman & Shurtleff (galvanic), 13 and 15 Tremont st. Boston, Mass.  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
 ELECTRO DYNAMIC CO. OF PHILADELPHIA (medical), 224 Carter st. Philadelphia, Pa. *see index to British advertisements.*  
 Flanigan J. R. & Co. (galvanic) 89 Court st. Boston, Mass.  
 FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
 FULLER SETH W. 22 Milk st. Boston, Mass.  
 Hendrich Dr. S. L. (medical) 467 5th av. New York. Above 40th st.  
 KIDDER JEROME MANUFACTURING CO. (medical) 820 Broadway, New York, *see index to advertisers.*  
 Kraft H. D., M.D. (medical) 467 5th av. New York. Above 40th st.  
 Law Telegraph Co. 140 Fulton st. New York.  
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 LECLANCHÉ BATTERY CO. 149 W. 18th st. New York, *see index to advertisers.*  
 PATRICK & CARTER, 114 S. 2nd st. Philadelphia, Pa.

**Battery Manufacturers—continued.**

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 Wagner E. W. 36 John st. New York.  
 WOLFE L. W. & Co. (medical) 120 S. cor. Douglas st. Omaha, Neb.

**Belts—Medical—Galvanic.**

F.—*Appareils médicaux (Fab. d')*  
 G.—*Magnetische Heilapparate.*

Hafelfinger Fred. 343 W. 37th st. New York.  
 Hahn Abraham, 296 Broadway, New York.  
 Matthews & Co. 92 Church st. New York.  
 Norman A. 4 Queen st. E. Toronto, Can.  
 Whiting Belt Co. 111 Liberty st. New York.  
 Zeltmacher Adolph, 84 Duane st. New York.

**Black Lead Manufacturers**

F.—*Graphite (Fab. de).*  
 G.—*Reisblei.*

JOSEPH DIXON CRUCIBLE CO. City, N.J. & 68 Reade st. New York.  
 McKinley Edward, 90 Crosby st. New York.  
 May Samuel & Co. 14 to 20 Oliver st. Mass.  
 Phoenix Mfg. Co. H. D. Atwood, Taunton.  
 Taunton Crucible Co. West village, Taunton.  
 Webb Robert & Co. 103 North st. Boston.

**Brackets and Pins.**

(*For Telegraph and Electric Light Poles*)

F.—  
 G.—

Booth J. R. Burlington, Vt.  
 DOW GEO. Q. North Epping, N.H. *see index to advertisers.*  
 Freeman & O'Neil, Claremont, N.H.  
 Harris L. B. Manchester, N.H.  
 Kurtz Jac. S. & Bro. 92 and 94 Beech lington, Vt.  
 Pierce & Linsley, Burlington, Vt.

**Braiding Machines for Covering**

F.—*Machines à recouvrir les fils.*  
 G.—*Maschinen zum Drahtenspinnen*

NEW ENGLAND BUTT CO. Providence, R.I., and 99 Chambers st. New York.  
 RHODE ISLAND BRAIDING MACHINE CO. 89 Aborn st. Providence, R.I. Manufacturers of braiding machines of all covering wire, and general machinery.



**Iron and Copper Founders.**

*F.—Bronze et cuivre (Usines de)*

*—Messing und Kupfer-Formen.*

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. G. 132 1st st. Brooklyn, E.D. N.Y.

. 13 Adams st. Brooklyn, N.Y.

opper & Brass Works, 196 E. Front st. i, O.

as Co. Boston, Mass.

2 Front st. Brooklyn, N.Y.

. n 2nd st. Brooklyn, N.Y.

ORT BRASS CO. 19 Murray st. New index to advertisers.

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Adolph, 155 Perry st. New York.

A. Blackstone in Eddy st. Provi- I.

rd S. r 14 Wooster st, New York.

nk, 117 Macdougall st. New York.

Son, 212 & 214 Lake st. Chicago, Ills.

IS MANUFACTURING CO. Tor- lonn. see index to advertisers.

351 Adams st, Brooklyn, N.Y.

Manufacturing Co. 10 N Jefferson o, Ills.

Sons, 101 N.J. R. R. av. Newark, N.J.

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58 2nd st. Brooklyn, N.Y.

. 26 1st st. Brooklyn, E. D. N.Y.

mas 67 Vestry st. New York.

t F. 108 Eddy st. Providence, R.I.

. 350 1st st. Brooklyn, E. D. N.Y.

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ohnson, 47 S Clinton st. Chicago, Ills.

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Brass Foundry, 70 West st. Brooklyn,

ge, r 101 Wooster st. New York.

liam, 106 Cannon st. New York.

orge A. 803 3rd av. New York.

as. W. 169 Christopher st. New York.

r J. & Son, Philadelphia, Pa.

ing Co. cor. Broad & Hamilton sts. ia, Pa.

& Co. Pascoag, R.I.

in, 1368 Dekalbar st. Brooklyn, N.Y.

trick, 11½ James slip, New York.

01 Wooster st. New York.

or. Hope & 9th sts. Brooklyn, E. D.

N. 60 Friendship st. Providence, R.I.

yson E. & Co. 86 Market st. Chicago,

ibe Works Co. 159 & 161 Lake st. Ills.

**Brass and Copper Founders—continued.**

Newall Williams & Co. Central Falls, R.I.

North Side Brass Wks. 57 N Wells st. Chicago, Ills.

NORTHROP A. C. Canal st. Waterbury, Conn. see index to advertisers.

Owens Owen, 226 Washington st. Chicago, Ills.

Pawtucket Brass Foundry (Henry Messter, pro.) Pawtucket, R.I.

Popper J. 186 Plymouth st. Brooklyn, N.Y.

Phillips Thomas & Co. 75 to 85 South Main st. Providence, R.I.

Plume & Atwood M'facturing Co. (M. McRoberts, agent), 115 Lake st. Chicago, Ills.

Providence Brass Foundry (A. H. Manchester, jr. prop.) 460 Eddy st, Providence, R.I.

Puffer A. D. & Sons, 46 Portland st. Boston, Mass.

Reid S. & Co. 47 W Washington st. Chicago, Ills.

Renton F. A. 70 West st. Brooklyn, E. D. N.Y.

Rogers W. C. & Co. 313 N Market st. Chicago, Ills.

Schoener W. L. 226 N. 9th st, Brooklyn, N.Y.

Scoville Manufacturing Co. (E. H. Patterson, agt.) 183 Lake st. Chicago, Ills.

Smeeth E. 125 W Randolph st. Chicago, Ills.

Smith Amos D. 2nd cor. 219 Eddy st. Providence, R.I.

So. Brooklyn Works, cor. Van Brunt & Grummitt sts. Brooklyn, N.Y.

Stedman Pascal H. Newport, R.I.

Stieglitz W. 37 Lorrimer st. Brooklyn, N.Y.

Thomas A. & Bro. 88 Market st. Chicago, Ills.

Titus W. H. 377 Broadway, Brooklyn, N.Y.

Tubal-Cain Brass Works (J. H. Lehner & Co. props.) S Clinton st. cor. W Monroe, Chicago, Ills.

Turner E. S. & Co. 4 N. La Salle st. Chicago, Ills.

Union Brass Manufacturing Co. 97 to 103 Ohio st. Chicago, Ills.

Weber F. & Son, 43 S Canal st. Chicago, Ills.

White Stillman, 1 Bark st. Providence, R.I.

Winsor & Money, 122 Dorrance st. Providence, R.I.

Wohlfarth A. 132 Leonard st. Brooklyn, N.Y.

Wolff L. Manufacturing Co. 93 to 111 W. Lake st. Chicago, Ills.

Wollensak J. T. 225 Lake st. Chicago, Ills.

Worrall & Co. 28 Elm st. New York.

**Brass and Copper Manufacturers.**

*F.—Bronze et Cuivre (Fab. de).*

*G.—Messing und Kupfer.*

ANSONIA BRASS & COPPER CO. 19 and 21 Cliff-st. New York, see index to advertisers.

Baker Brass Co. 11 Light st. New York.

Benedict & Burnham Manufacturing Co. (H. C. Hayden, agent), 57 Oliver st. Boston, Mass. 13, Murray st. New York, and Waterbury, Conn.

Blake Wm. & Co. cor. Brighton and Allen sts. Boston, Mass.

Bristol Brass & Clock Co. 33 Warren st. New York & Forestville, Conn.

## Brass and Copper Manufacturers—contd.

Brooklyn Brass and Copper Co. cor. Pearl and Front sts. Brooklyn, N.Y.  
 Cocker Bros. & Co. 11 Broad st. Boston, Mass.  
 Davis Thomas B. 215 E. 64th st. New York.  
 Delagrandiere Jules, 218 Thompson st. New York.  
 Detroit Copper Mining Co. of Arizona, Detroit, Michigan.  
 Detroit & L. Sup. Copper Co. Detroit, Michigan.  
 Ehrich Emil, 91 Orchard st. New York.  
 Gillis J. P. & Co. 69 Beekman st. New York.  
 Hampel Otto, 191 North st. New York.  
 Hardy & Pinkman, 162 Elm st. New York.  
 Harnickell A. 83 Maiden la. New York. Agent for the Gunpowder Copper Works.  
 Harrison Chas. & Co. 16 W. 4th st. New York.  
 Hayden & Co. 86 Beekman st. New York.  
 Hendricks Brothers, 49 Cliff st. New York.  
 Heringer Charles, r 142 Wooster st. New York.  
 Hilton Edward G. 112 John st. New York.  
 Holmes, Booth & Haydens (D. F. Urquhart, agent), 18 Federal and 117 Congress sts. Boston, Mass.  
 Holmes & Wessell Metal Co. 525 W. 24th st. New York.  
 Homing J. 1368 Dekalbar st. Brooklyn, N.Y.  
 Huttling George, 151 Bleecker st. New York.  
 Hyatt W. L. 254 State st. Brooklyn, N.Y.  
 Janusch Fredk. G. 360 E. 19th st. New York.  
 Jenkins Bros. 71 John st. New York.  
 Jones J. & H. & Co. Limited, r 218 N. 2nd st. Philadelphia, Pa.  
 Kirk Bros. 118 Canal st. Philadelphia, Pa.  
 Klemann Peter 172 Centre st. New York.  
 Knapp Manufacturing Co. 24 Frankfort st. New York.  
 Knight George W. Master, C. Mascher st. Philadelphia, Pa.  
 Krip Charles, 716 Cherry st. Philadelphia, Pa.  
 Lamboley Francis, 117 South 5th av. New York.  
 Lapp Davis C. 631 Filbert st. Philadelphia, Pa.  
 Lewisohn Bros. 121 and 123 Greene st. New York.  
 Lonergan J. E. & Co. 211 Race st. Philadelphia, Pa.  
 Long W. 136 1st st. Brooklyn, E. D. N.Y.  
 McCambridge & Co. 527 Cherry st. Philadelphia, Pa.  
 McCracken D. Albion N.Y.  
 McNab & Harlin Manufacturing Co. 56 John st. New York.  
 Manhattan Brass Co. 475 First av. New York.  
 MERCHANT & CO. Cliff st. c. Beekman st. New York, 525 Arch st. and 520 Cherry st. Philadelphia, Pa.  
 Middleberg & Christian, 514 Commerce st. Philadelphia, Pa.  
 Miller & Co. 718 Cherry st. Philadelphia, Pa.  
 Miller Edward & Co. Meriden, Conn.  
 Miners Copper Co. Detroit, Michigan.  
 Moffett James O. 119 Prince st. New York.  
 Morris Tasker & Co. Limited, 15 Gold st. New York.  
 Morse Jas. G. 76 John st. New York.

## Brass and Copper Manufacture

Mousley Charles, 1241 Howard st. Philadelphia, Pa.  
 Mullaney James, 204 E. 23rd st. New York.  
 Nageldinger John 140 Centre st. New York.  
 Nathan & Dreyfus, 92 Liberty st. and 1st av. New York.  
 N. B. Copper Co. New Bedford, Mass.  
 Nelson & Finkel, 430 E. 10th st. New York.  
 New Haven Copper Co. 290 Pearl st. New York.  
 NORTHROP A. C. 35 Canal st. New York. Conn. see index to advertisers.  
 Novelty Manufacturing Co. 20 Warren st. New York.  
 Ore Knott Copper Co. 6 Gray st. Baltimore, Md.  
 Orford Copper and Nickle Company (Point) Bayonne City, N.J.  
 Osborne & Cheesman Co. Ansonia, Conn.  
 Palmer Manufacturing Co. 106 Beekman st. New York.  
 Peck Bros. & Co. 72 Franklin st. New York.  
 Penna. Brass Works, 1226 Hamilton st. Philadelphia, Pa.  
 Perks Charles, 627 Arch st. Philadelphia, Pa.  
 Petach Conrad, Franklin & Centre sts. Philadelphia, Pa.  
 Phelps, Dodge & Co. 11 Cliff st. New York.  
 Philadelphia Smelting Company, 12th st. Philadelphia, Pa.  
 PHOSPHOR BRONZE SMELTING CO. Arch st. Philadelphia, Pa., see index to advertisers..  
 Plume & Atwood Manufacturing Co. Federal st. Boston, Mass.  
 Pounds Wm. H. 1729 S. 6th st. Philadelphia, Pa.  
 Prahar L. & Bro. 3 Mission pl. New York.  
 Reeves Paul S. 760 S. Broad st. Philadelphia, Pa.  
 Renton F. A. 70 West st. Brooklyn, N.Y.  
 Renz & Lindsey, 627 Arch st. Philadelphia, Pa.  
 Revere Copper Co. 242 South st. New York.  
 Canton, Mass. and 47 Kilby st. Boston, Mass.  
 Rich Edwin S. 114 John st. New York.  
 Rider & Conley, 55 Water st. Pittsburgh, Pa.  
 Ross Edward, 114 Centre st. New York.  
 Saville Thomas, 1231 Buddens pl. Philadelphia, Pa.  
 Scheinper Wm. 138 Wooster st. New York.  
 Scoville Manufacturing Co. 419 Broome st. New York.  
 Sherman John 296 B'way, New York.  
 Somers Bros. cor. Front and Pearl sts. New York.  
 Stone Fredk. & Co. 62 Gold st. New York.  
 Strickrodt C. & Co. 136 Centre st. New York.  
 Suhr Emil, 140 Centre st. New York.  
 Summers & Hunt, 57 Haverhill st. Boston, Mass.  
 Talmage & Weidley, 259 N. 15th st. Philadelphia, Pa.  
 Taunton Copper Manufacturing Co. 11 Boston, Mass. and Taunton, Mass.  
 Taws & Hartmann, 1235 N. Front st. Philadelphia, Pa.  
 Thom & Payne, 123 W. 28th st. New York.  
 Tiebout W. & J. 33 Chambers st. New York.

## 1 Copper Manufacturers—*contd.*

Seymour Manufacturing Co. Torrington, Conn.  
 Manufacturing Co. 97 to 103 Ohio go, Ills.  
 Works, 247 W. 5th st. Cincinnati, Ohio.  
 G. 321 E. 22nd st. New York.  
 J. r 142 Wooster st. New York.  
 Sons, 89 Chambers, and 71 Reade sts. New York, and Ansonia, Conn.  
 RN & MOEN MANUFACTURING Co. Worcester and Boston, Mass. & New York.  
 Brass Co. 296 Broadway, New York, and 101 W. 1st st. Providence R. I. Mills, Waterbury, Conn.  
 ro. 1608 Vienna st. Philadelphia, Pa.  
 & Mingle, N. 5th st. cor. Bark st. Philadelphia, Pa.  
 Daniel A. r 59 Ann st. New York.  
 sser, 83 Centre st. New York.

## 1 Copper Masters & Merchants.

*F.—Bronze et Cuivre.*

*G.—Messing und Kupfer.*

9 Liberty st. New York.  
 Fire Hose Manuf. Co. (Boston office 121 W. Williams st., c. Spruce st. Chelsea, Mass.)  
 Tube Works, 97 State st. Boston, Mass.  
 Tube Works of Boston, 400 Locust st. Philadelphia, Pa.  
 BRASS & COPPER CO. 19 and 21 New York, *see index to advertisers.*  
 ss Co. 11 Light st. and 62 Cedar St. New York.  
 Burnham Manufacturing Co. 13 Murray St. New York and Waterbury, Conn.  
 mile V. 109 Wooster st. New York.  
 rt, 481 9th av. New York.  
 PORT BRASS CO. Bridgeport, Conn. New York, *see index to advertisers.*  
 ss & Clock Co. 32 Warren st. New York and Forrestville, Conn.  
 Brass & Copper Co. 100 John st. New York.  
 cor. Pearl & Front sts. Brooklyn, N.Y.  
 Brothers, 82 Chambers st. New York.  
 Bros. Waterbury, Conn.  
 rister & Mnfg. Co. 49 Astor house, New York.  
 Copper Co. Phoenixville, Pa.  
 nford S. r. 14 Wooster st. New York.  
 ASS MANUFACTURING CO. (sheet lead wire, etc.) Torrington, Conn. *see index to advertisers.*  
 W. G. & Co. 96 John and 19 Platt sts. New York.  
 liere Jules, 218 Thompson st. New York.  
 mes H. 61 Astor house, New York.  
 na & Fitz, 110 North st. Boston, Mass.  
 . & Son, 105 Duane st. New York.  
 James, 106 Cannon st. New York.

## Brass & Copper Masters & Merchants—*continued.*

Griggs Elizur D. 63 Duane st. New York.  
 Holmes, Booth & Haydens, New York, Philadelphia, Pa., Waterbury, Conn. and London, England.  
 PHOSPHOR BRONZE SMELTING CO. Limited, 512 Arch st. Philadelphia, Pa., *see index to advertisers.*

## Brass Finishers.

*F.—Bronze.*

*G.—Messing-former.*

American Fire Hose Manufacturing Co. 12 Temple road, Boston, Mass. and at Chelsea, Mass.  
 Barnet Alexander, 85 Franklin st. Chicago, Ills.  
 Bent Thomas, 13 & 30 Market st. Chicago, Ills.  
 Blaesus Emile V. 109 Wooster st. New York.  
 Cahill John, 207 Centre st. New York.  
 Clark W. P. 33 Bowker st. Boston, Mass.  
 Connolly P. 351 Adams st. Brooklyn, N.Y.  
 Cory Charles & Son, 278 Division st. New York.  
 Cunningham James, 151 W. 29th st. New York.  
 D'Este & Co. 59 Beverley st. Boston, Mass.  
 Dinnen A. & J. 204 E. 29th st. New York.  
 French H. G. 199 Broadway, New York.  
 Graf J. cor. Quinnett & Throop sts. Brooklyn, N.Y.  
 Hallowell Albert, Lowell, Mass.  
 Hamilton John, Bridgeport, Conn.  
 Harris E. T. & Co. 103, 105, 107 W. Monroe st. Chicago, Ills.  
 Hartill William, r. 548 Grand st. New York.  
 Heathcote John, 170 Eddy, and 60 Friendship st. Providence, R.I.  
 Hilbert Edward, Lawrence, Mass.  
 Hohlweck George, 219 Bowery, New York.  
 Hopkins Charles H. Lyndonville, Vt.  
 Hubbard A. W. Fitchburg, Mass.  
 Hubert Baptist, 174 Worth st. New York.  
 Hyde Joseph, 103 W. 39th st. New York.  
 Johnson John A. 116 Pine st. Providence, R.I.  
 Kennedy John H. 713 7th av. New York.  
 Keune August, Franklin n. Centre st. New York.  
 Kimm Frederick, 5 Centre mkt. pl. New York.  
 Kleb George, r. 101 S. 6th av. New York.  
 Koch & Adenauer, r. 213 Grand st. New York.  
 Landers Edmund, 12 Jacob st. New York.  
 Lennon & Co. 292 Washington st. Boston, Mass.  
 Lesemann Henry, 97 Elizabeth st. New York.  
 McCann Peter, 154 South st. New York.  
 McKenna James J. & Brother, 424 E. 23rd st. & 396 Broome st. New York.  
 McNab & Harlin Manufacturing Co. 56 John st. New York.  
 Mahoney J. & P. 213 Grand st. New York.  
 Marshall Robert, r. 7 Allen st. New York.  
 Martin M. 83 South 5th av. New York.  
 May Henry, 140½ Pitt st. New York.  
 Mayhew, Payson E. & Co. 86 Market st. Chicago, Ills.

## Brass Finishers—continued.

Miller Thomas, 31 W. 3rd st. New York.  
 Mitchell R. & Co. 5 Haymarket sq. Boston, Mass.  
 Moge William, 418 W. 27th st. New York.  
 Moore Thomas, 80 Elm st. New York.  
 Morgan Henry, Springfield, Mass.  
 Morse Andrew J. & Son, 140 Congress st. Boston, Mass.  
 Mowry & Phillips, 126 Cross st. Boston, Mass.  
 N. E. Gauge Co. 380 Atlantic av. Boston, Mass.  
 Oehlmann Adolph, r. 381 Broome st. New York.  
 Palmenberg Joseph R. 466 Broome st. New York.  
 Payne John H. 33 W. 29th st. New York.  
 Payne Joseph S. 148 W. 33rd. st. New York.  
 Pearce Albert, 11 Hawkins st. Boston, Mass.  
 Power Maurice J. 5 Beekman & 218 E. 25th sts. New York.  
 Redfern W. C. 13 Bowker st. Boston, Mass.  
 Royle Charles, cor. Franklin and Centre sts. New York.  
 Sandermann Herman, 16 McNibbin st. Brooklyn, N.Y.  
 Sands & Baxter, 6 Reade st. New York.  
 Scanlon Michael, r. 120 Elizabeth st. New York.  
 Scheurer F. 68 Gerry st. Brooklyn, N.Y.  
 Schilling Peter, r. 43 Eldridge st. New York.  
 Schirmer Charles, r. 100 Wooster st. New York.  
 Schott Emanuel, 80 Elm st. New York.  
 Schrader August, r. 216 William st. New York.  
 Smith & Smart, Salem, Mass.  
 Staats & Dillmeier, 134 1st st. Brooklyn, E.D. N.Y.  
 Stevenson Henry, 97 Elizabeth st. New York.  
 Stone Henry N. 132 Commercial st. Boston, Mass.  
 Struter Herman & Sons, 78 Sudbury st. Boston, Mass.  
 Summers & Hunt, 57 Haverhill st. Boston, Mass.  
 Sweeney J. & Barrett, 3 Dutch st. New York.  
 Sweeney Edward, 4 Duane st. New York.  
 Thom Charles A. 123 W. 28th st. New York.  
 Thompson W. H. Springfield, Mass.  
 Vankuyck Henry & Son, 237 Centre st. New York.  
 Ward & Curley, 62 Sudbury st. Boston, Mass.  
 Watts J. E. Lawrence, Mass.  
 Whateley George B. 139 Lewis st. New York.  
 Wilson David, 515 W. 33rd. st. New York.  
 Wolforth A. 132 Leonard st. Brooklyn, N.Y.  
 Wood Andrew, 387 Bowery, New York.  
 Woodhouse Daniel A. r. 59 Ann st. New York.  
 Zane Joseph & Co. 81 Sudbury st. Boston, Mass.

## Brass Workers Supplies and Tools.

*F.—Outils pour Usines de Bronze.*

*G.—Werkzeug für Messing-Formen.*

American Tool and Machine Co. 84 Kingston st. Boston, Mass.  
 Patterson H. T. & Co. 13b Centre st. New York.

## Brokers—Electrical Stock.

*F.—*

*G.—*

DELANO, HAINES & CO. Temple man st. New York, *see index to advertisers.*  
 HAINES BROS. 55 Broadway, New York, *see index to advertisers.*  
 Kohlsaat & Co. 30 Pine st. New York.  
 LYNCH & BANTA, 98 Washington st. Ills. *see index to advertisers.*  
 Suportas A. J. & Co. 58 Exchange pl. N.  
 Skeele Frank H. 55 Broadway, New York.  
 Whipple Geo. H. 58 Exchange pl. New York.

## Bronze Founders and Manufacturers.

*F.—Fondeurs de Bronze.*

*G.—*

Allen W. H. 113 Market st. Philadelphia  
 Henry & Bonnard Bronze Manufacturers, general offices, 115 Broadway, r. 62 works, 237 and 239 Mercer st. New York.  
 ROEBLING JOHN A. SONS CO. N.J. San Francisco, Cal. and New York.

## Cable Manufacturers.

*F.—Câble télégraphique (Fab. de*

*G.—Kabel-Fabriken.*

AMERICAN ELECTRICAL WORKS, Stewart st. Providence, R.I. *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey York, & Ansonia, Conn. *see index to advertisers.*  
 DAY A. G. 120 Broadway, New York, *see index to advertisers.*  
 Holmes, Booth & Haydens, New York; Mass; Philadelphia, Pa; Waterbury and London, England.  
 NEW YORK ELECTRIC LINES CO. 39 Wall st. New York.  
 PHOSPHOR BRONZE SMELTING Limited, 512 Arch st. Philadelphia *see index to advertisers.*  
 TILLOTSON L. G. & Co. 5 and 7 Dey York. Factory, 139, 141, 143 Centre York, *see index to advertisers.*  
 WESTERN ELECTRIC CO. New Chicago, Indianapolis, and Boston, *see index to advertisers.*

## Carbon Manufacturers.

*F.—Charbons Electriques.*

*G.—Holzkohlen-Brennereien.*

Allen W. H. 113 Market st. Philadelphia  
 AMERICAN CARBON CO. St. Louis, *see index to advertisers.*  
 BOULTON CARBON CO. Cleveland, O. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Co.) Euclid av. Cleveland, O. *see index to advertisers.*



## Manufacturers—continued.

CAL SUPPLY CO. 17 Day st. New York.  
*Index to advertisers.*  
 296 Pearl st. New York.  
 David, 13 Rutger st. Newark, N.J.  
 L. W. & CO. 120 South 14th st. cor. st. and 206 N 16th st. Masonic block, Neb.

## Iron Pipes and Fittings.

ed, 43 Greene st. 1483 Broadway & 540 st. New York.  
 Wm. W. 85 Liberty st. New York.

## —Manufacturing & Analytical.

*Industries Industriels et Métallurgiques.*

*G.—Chemische Fabriken.*

W. & Co. 110 S. Charles st. Baltimore.  
 & Bacon, 717 Clay st. San Francisco,  
 uline and Chemical Co. Albany, N.Y.  
 . 610 Arch st. Philadelphia, Pa.  
 Woodward & Co. Peoria, Ills.  
 I. M. 100 Reade st. New York.  
 accour, 547 W. 18th st. New York.  
 F. & Co. 84 Front st. New York.  
 W. 153 Heyward st. Brooklyn, N.Y.  
 ury, 82 Water st. Boston, Mass.  
 E. 76 State st. Boston, Mass.  
 ames F. 4 State st. Boston, Mass.  
 den M. 402 Washington st. New York.  
 T. 19th c. Oxford st. Philadelphia, Pa.  
 Chromo Works, Charles st. c. Lexington,  
 Baltimore, Md.  
 emical Co. 59 Wabash av. Chicago, Ills.  
 m. W. & Co. 35 India st. Boston, Mass.  
 . Gray, 92 22nd st. Chicago, Ills.  
 emical Co. Long Eddy, N.Y.  
 1 J. P. 3 E. 14th st. New York.  
 o. 116 Olive st. St. Louis, Mo.  
 A. 101 Post st. San Francisco, Cal.  
 J. & Co. 143 Maiden la. New York.  
 Marcus, 6 Barclay st. New York.  
 ames C. 96 Ashland blk. Chicago, Ills.  
 lapp & Co. 20 Liberty st. New York.  
 eph & Bro. 183 Pearl st. New York.  
 Johnson av. Brooklyn, N.Y.  
 C. C. 116 Front st. San Francisco, Cal.  
 . 81 4th av. Philadelphia, Pa.  
 Rathbone, 12 Cedar st. New York.  
 . 34 City Hall pl. New York.  
 Milwaukee, Wis.  
 H. I. 71 Oakland st. Brooklyn, N.Y.  
 ertott & Blair, 919 Chant st. Philadelphia,  
 110 Sutter st. San Francisco, Cal.

## Chemists—Manufacturing & Analytical. —continued.

Bourgougnon A. 26 W. 4th st. New York.  
 Bowker H. L. & Co. 295 & 297 Franklin st. Boston, Mass.  
 Bragg E. B. 84 Broad st. New York.  
 Britton J. B. 339 Walnut st. Philadelphia, Pa.  
 Bromo-Chemical Co. 24 Liberty st. New York.  
 Brown J. J. & Sons, 185 Summer st. Boston, Mass.  
 Brown Walter Lee, 105 Metropolitan blk. Chicago, Ills.  
 Brugman F. & Son, 41 Ann st. New York.  
 Bullock & Crenshaw, 528 Arch and 531 North sts. Philadelphia, Pa.  
 Burecy Chemical Co. Binghamton, N.Y.  
 Cabot Samuel jun. 70 Kilby st. Boston, Mass.  
 Castner H. Y. & Bro. 197 Pearl st. New York.  
 Chamvenet Reigis & Bro. 701 Pine st. St. Louis, Mo.  
 Chapman Green & Co. 91 Washington st. Chicago, Ills.  
 Chaskel Jas. 44 W. Broadway, New York.  
 Chemical Co. of Boston, 32 S. Charles st. Baltimore, Md.  
 Chesapeake Chemical Works, 157 W. Fayette st. Baltimore, Md.  
 Christian R. S. 814 Chestnut st. Philadelphia, Pa.  
 Church & Co. 129 Pearl & 82 Beaver sts. New York.  
 Clausen E. Cleveland, O.  
 Clay J. jun. 60 Cedar st. New York.  
 Cochrane A. & Co. 55 Kilby st. Boston, Mass.  
 Colby F. F. 4th st. c. Market st. St. Louis, Mo.  
 Cooper Charles & Co. 194 Worth st. New York; works, Newark, N.J.  
 Crane F. G. 53 Market st. Chicago, Ills.  
 Crouse J. L. A. 36 Beekman st. New York.  
 Cresson C. M. 417 Walnut st. Philadelphia, Pa.  
 Cruse E. F. 20 Bridge st. Brooklyn, N.Y.  
 Cumberland Chem. & Mfgt. Co. Cumberland, Md.  
 Darlton Nelson & Co. 133 Water st. New York.  
 Davenport B. F. Mass. Coll. Pharm. Boston, Mass.  
 De Andreis B. 10 Vanderwater st. San Francisco, Cal.  
 De La Fontaine M. 1707 Wabash av. Chicago, Ills.  
 Dibble Manufacturing Co. Trenton, N.J.  
 Dick Dundas & Co. 112 White st. New York.  
 Diecks Pharm. Ex. Co. 173 G'wich. st. New York.  
 Dodge & Olcott, 88 William st. New York.  
 Donovan J. H. 122 Water st. Boston, Mass.  
 Doremus C. A. & R. O. 25 Union sq. New York.  
 Doremus R. O. 52 Union sq. New York.  
 Dorsay M. T. Eastern av. N. 1st st. Baltimore, Md.  
 Doscher H. S. 2nd c. 1st st. Brooklyn, E.D. N.Y.  
 Draper John C. 429 Lexington av. New York.  
 Dreyfus Aaron & Co. 15 Cedar st. New York.  
 Dudley & Co. 8 Boerum pl. Brooklyn, N.Y.  
 Dudley Wm. L. Secretary American Iridium Co. Cincinnati, O.  
 Eames Chas. J. 26 Pine st. New York.  
 Eaton A. K. 65 Henry st. Brooklyn, N.Y.

**Chemists—Manufacturing & Analytical**

—continued.

Edrohi Isaac D. 227 Greenwich st. New York.  
 Eimer & Amend, 205 to 211 3rd av. New York.  
 Elliott, Hopke & Mattison, 197 Pearl st. New York.  
 Endermann Herman, 33 Nassau st. New York.  
 Erkenbrach J. 34 Platt st. New York.  
 Evanovitch G. 11 E. 10th st. New York.  
 Everett A. H. 1702 Filmore st. San Francisco, Cal.  
 Falkenan & Reese, 328 Montgomery st. San Francisco, Cal.  
 Fennel A. 8th st. cor. Vine st. Cincinnati, O.  
 Fisher D. Milwaukee, Wis.  
 Fletcher C. R. 209 Washington st. Boston, Mass.  
 Fongera E. 309 8th st. Brooklyn, N.Y.  
 Forest City Chemical Co. Cleveland, O.  
 Fuller J. P. 629 Hudson st. New York.  
 Fuston Charles B. 119 Pearl st. New York.  
 Gallatin A. H. 26 Cooper Union, New York.  
 Gallop Alfred, Sterling, Conn.  
 Gentsch T. & Co. Cleveland, O.  
 Gesmer George W. 45 Cliff st. New York.  
 Gifford Wm. E. 54 Pine st. New York.  
 Goetschius H. 590 Washington st. New York.  
 Goldstone M. Alex. 113 Church st. Philadelphia, Pa.  
 Gordon W. L. Louisville, Ky.  
 Grasselli E. & Sons, Cleveland, O.  
 Greve T. L. A. 6th st. c. John st. Cincinnati, O.  
 Gross Bros. 264 Grand st. Brooklyn, N.Y.  
 Grund F. A. 121 Front st. New York.  
 Gurtermann Alex. 159 Front st. New York.  
 Habirshaw Wm. M. 159 Front st. New York.  
 Haines R. 912 Sansom st. Philadelphia, Pa.  
 Hampden Paint & Chem. Co. Springfield, Mass.  
 Hance Bros. & White, 309 Washington st. Boston, Mass.  
 Hanks H. G. 212 Sutter st. San Francisco, Cal.  
 Harnish Hugo H. 113 Water st. New York.  
 Havel L. 929 Broadway, Brooklyn, N.Y.  
 Hay G. 45 S. Diamond st. Allegheny, Pa.  
 Hayden W. R. Bedford, Mass.  
 Hayes H. P. & Co. Buffalo, N.Y.  
 Hecking F. & Co. 388 Pearl st. New York.  
 Heller Hirsh & Co. 2597 Archer av. Chicago, Ills.  
 Henes Wm. F. 159 E. 88th st. New York.  
 Heun E. Vine st. cor. Auburn st. Cincinnati, O.  
 Hiepe H. C. 104 John st. New York.  
 Hilt D. Lafayette, Ind.  
 Hinman C. W. 32 Hawley st. Boston, Mass.  
 Hiscox & Co. 163 William st. New York.  
 Hobart G. 1002 Diamond st. Philadelphia, Pa.  
 Huband T. I. 3rd st. c. Spruce st. Philadelphia, Pa.  
 Hubbard A. 338 E. 14th st. New York.  
 Huyck J. H. & Co. 111 N. Water st. Chicago, Ills.  
 Ide A. C. 81 4th st. San Francisco, Cal.  
 Irelan Wm. jun. 49 Merchants' exchange, San Francisco, Cal.  
 Jackson H. & Sons, 105 Raymond st. Brooklyn, N.Y.  
 James Walter M. & Co. 144 S. 4th st. Philadelphia, Pa.

**Chemists—Manufacturing & An**

—continued.

Johnson & Shaw, 40 India whf. Boston  
 Johnston J. F. & Co. Indianapolis, Ind  
 Johnston Wm. D. 118 Halbeck st. S  
 cisco, Cal.  
 Judge J. F. 6 st. cor. Mount st. Cincin  
 Judson W. E. Cleveland, O.  
 Kasley & Mattison, 332 N. Front  
 delphia, Pa.  
 Keith B. & Co. 41 Liberty st. New Yo  
 Keith B. & Co. Stamford, Conn.  
 Kendall E. D. 85 Fort Green pl. Brook  
 Kense J. S. 15 New Chambers, New Y  
 Ker W. W. & Co. 113 Reade st. New Y  
 Kidder S. & Co. 46 Main st. Boston, M  
 King L. J. 16 Dey st. New York.  
 Klipstein August 52 Cedar st. New Yo  
 Kniffler B. 58 W. 4th st. Cincinnati, C  
 Kruckowizer S. & Harnish, 113 V  
 New York.  
 Kraft C. H. 55 Fulton st. New York.  
 Kraus F. 469 McMillan st. Cincinnati,  
 Kroupa R. J. 506 6th st. New York.  
 Kurlbaum & Co. 1750 N. Front st. Phi  
 Pa.  
 Kurtz A. M. Turk cor. Hyde st. San I  
 Cal.  
 Lambert & Co. 307 Locust st. St. Loui  
 Landell John E. 186 Jackson st. Chicag  
 Lanszweert L. 360 4th st. San Francisc  
 Larkin & Scheffer, 209 to 218 Myrt  
 Louis, Mo.  
 Lawler C. J. 291 Nostrand av. Brookly  
 Ledoux & Ricketts, 10 Cedar st. New Y  
 Lee, Blackburn & Co. 59 Murray st. N  
 Lee James & Co. 72 Pine st. New York  
 Lee C. T. 45 Kilby st. Boston, Mass.  
 Lefevere J. B. 401 Kearny st. San Fran  
 Leffman H. 715 Walnut st. Philadelphi  
 Leis Chemical Manufac. Co. Lawrence,  
 Leland D. 60 Broad st. Boston, Mass.  
 Lengfeld A. L. Stockton st. cor. Grear  
 Francisco, Cal.  
 Lennig Charles & Co. (Limited) 1229 I  
 and 112 S. Front st. Philadelphia, Pa  
 Lilly Eli & Co. Indianapolis, Ind.  
 Lodi Chemical Works, 38 Platt st. New  
 Loebner J. 47 Pulaski st. Brooklyn, N.Y  
 Lombard C. 36 W. 4th st. Cincinnati, C  
 Lorentz & Rittler, 80 South st. Baltimor  
 Love E. G. 122 Bowery, New York.  
 Luckhardt C. A. & Co. 23 Stevenae  
 Francisco, Cal.  
 Luigo Orizazio, 4 University bldg. New  
 Luthy O. 220 Church st. Philadelphia,  
 Maas & Waldstein, 81 Greenwich st. N  
 Mahla & Chappell, Stewart av. cor.  
 Chicago, Ills.  
 Mallinckrodt Chemical Works, 2nd a  
 crodt st. St. Louis, Mo.  
 Manufacturing Chemists Association, H  
 treus. Grey's Ferry rd. Philadelphia,  
 Marchand C. 635 Broadway, New York.

## Manufacturing & Analytical.

—continued.

49 & 81 Clark st. Chicago, Ills.  
 Rod & Co. Cleveland, O.  
 Embury, 99 N. Moore st. New York.  
 our & Co. Minneapolis, Minn.  
 att & Co. 318 Clay st. San Francisco,  
  
 59 Broad st. Boston, Mass.  
 44 Wickliff st. New York  
 t Co. 59 Dey st. New York.  
 114 Franklin st. Brooklyn, N.Y.  
 122 Front st. New York.  
 A. 61 Broadway, New York.  
 J. W. Haverhill, Mass.  
 emical Works Co. 159 Front st.  
  
 Cedar st. New York.  
 o. 159 Front st. New York.  
 Laboratory, 40 Broadway and 53  
 w York.  
 a. Assoc. 10 College pl. New York.  
 n Reduction and Chemical Works,  
 st. Chicago, Ills.  
 106 Broadway, New York.  
 Windsor, N.J.  
 & Co. 60 Maiden la. New York.  
 w D. 37 Dey st. New York.  
 ical Co. 35 John st. New York.  
 . C. & D. 5 William st. New York.  
 10th cor. Dickinson st. Philadelphia,  
  
 7. 113 Walnut st. Philadelphia Pa.  
 & Bro. 240 Pearl st. New York.  
 s & Co. 81 Maiden la. New York.  
 loden, 244 Plymouth st. Brooklyn,  
  
 . 2 Platt st. New York.  
 . 1 Wall st. New York.  
 Vm. & Kullroff, 98 Liberty st.  
  
 B. O'Farrell st. c. Stockton st. San  
 Cal.  
 36 Platt st. New York.  
 1729 S. 2nd st. Philadelphia, Pa.  
 oston av. n. 166th st. New York.  
 gs, Washington. Univer. St. Louis,  
  
 eightman, 56 Maiden la. New York.  
 Mnfg. Co. 35 Broadway, New York.  
 errill, 95 Milk st. Boston, Mass.  
 58 Maiden la. New York.  
 Sacramento st. San Francisco, Cal.  
 li P. 1233 Filbert st. Philadelphia, Pa.  
 & Co. 11 Central st. Boston, Mass.  
 2 New Church st. New York.  
 5 S. 7th st. St. Louis, Mo.  
 rick 182 Fulton st. New York.  
 158 Chambers st. New York.  
 os. H. 73 Pine st. New York.  
 : J. P. 171 Park av. Chicago, Ills.  
 f. 122 Front st. New York.  
 . L. 34 N. Calvert st. Baltimore, Md.  
 aris, 95 Liberty st. New York.

## Chemists—Manufacturing & Analytical.

—continued.

Root Leonard G. 123 Lexington av. New York.  
 Rosengarten & Sons, 26 Liberty st. New York.  
 Rothschild Joseph, 63 S. Canal st. Chicago, Ills.  
 Rudolph Chas. B. 45 Liberty st. New York.  
 Rupp Wm. 117 Pearl st. New York.  
 Savage Joseph G. 119 E. 12th st. New York.  
 Saxoline Co. 63 Union st. Boston, Mass.  
 Schering & Glatz, 55 Maiden la. New York.  
 Schiffin Phillip, 213 Pearl st. New York.  
 Schmidt Chas. 294 Main st. Cincinnati, O.  
 Schmidt F. N. 3197 Madison st. Chicago, Ills.  
 Schoenfeld E. 906 S. 7th st. St. Louis, Mo.  
 Schoenfeld Harry, 159 North av. Chicago, Ills.  
 Scott & Brown, 108 Wooster and 575 Greenwich  
 sts. New York.  
 Scott Wm. 348 Julianna st. Philadelphia, Pa.  
 Seabury & Johnson, 21 Platt st. New York.  
 Sharpe & Dohmo, Pratt cor. Howard st. Balti-  
 more, Md.  
 Sharpless S. P. 13 Broad st. Boston, Mass.  
 Sherer Bros. 122 Front st. New York.  
 Sherer Edward, 402 Washington st. New York.  
 Siebel J. E. office, 92 La Salle st.; laboratory,  
 242 Burling st. Chicago, Ills.  
 Simon J. P. L. & Co. 344 E. 23rd st. New York.  
 Simpson T. J. 217 4½ st. Washington, D.C.  
 Sloane T. O. C. 119 Pearl st. New York.  
 Smith L. H. & Co. 25 Michigan av. Chicago, Ills.  
 Springer A. 48 E. 2nd st. Cincinnati, O.  
 Squibb E. R. 36 Doughty st. Brooklyn, N.Y.  
 Squire F. B. & Co. 4 Cedar st. New York.  
 Standard Chemical Co. Cleveland, O.  
 Stange C. 407 W. Kinzie st. Chicago, Ills.  
 Star Chemical Works, 383 Pearl st. New York.  
 Stebbins J. H. jr. 68 Beaver st. New York.  
 Steele J. G. & Co. 635 Market st. San Fran-  
 cisco, Cal.  
 Steylaars & Rossi, Montgomery av. cor. Dupont  
 st. San Francisco, Cal.  
 Stillman & Koefoed, 40 Broadway, New York.  
 Stillman Thomas B. & Co. 40 B'way, New York.  
 Stillwell & Gladding, 55 Fulton st. New York.  
 Strong C. G. 21 3rd st. San Francisco, Cal.  
 Symington Bros. & Co. 7 German st. Baltimore,  
 Md.  
 Taylor & Barker, 3 Boston and Maine Depot,  
 Lowell, Mass.  
 Taylor E. R. Cleveland, O.  
 Taylor J. K. Bridgeport, Conn.  
 Thayer H. & Co. Cambridgeport, Mass.  
 Thayer B. B. 1 New Montgomery st. San Fran-  
 cisco, Cal.  
 Tiffany Walton C., 10 Spruce st. New York.  
 Tilden & Co. 24 Liberty st. New York.  
 Toche, Grothe & Co. 59 Goerck st. New York.  
 Toledo Chemical Manufacturing Co. Toledo, O.  
 Torry W. P. 12 N. Holliday st. Baltimore, Md.  
 Tryon J. W. 36 Geary st. San Francisco, Cal.  
 Urban A. 497 10th av. New York.  
 Wagner J. C. Vine st. cor. Corryst. Cincinnati, O.  
 Wakelee & Co. Montgomery st. cor. Bush st. San  
 Francisco, Cal.

**Chemists—Manufacturing & Analytical.**

—continued.

Walker J. E. & Co. 20 Cortlandt st. New York.  
Walker H. W. 109 Montgomery blk. San Francisco, Cal.  
Wallace S. 113 Walnut st. Philadelphia, Pa.  
Walldorf H. 376 Grand st. Brooklyn, N.Y.  
Walton Chemical Co. 23 & 92 Market st. Chicago, Ills.  
Warder Robert B. Prof. state and analytical chemist, North Bend, Ohio.  
Warner Wm. R. & Co. 49 Cedar st. New York.  
Wayne E. S. 45 Main st. Cincinnati, O.  
Weichert A. 101 Wall st. New York.  
Weld Chas. D. & Co. 60 Broad st. Boston, Mass.  
Wenzell Wm. T. 852 Market st. San Francisco, Cal.  
West John C. & Co. 183 W. Madison st. Chicago, Ills.  
Wheeler S. P. & Co. Bridgeport, Conn.  
Wheeler C. Gilbert 40, 42 and 81 Clark st. Chicago, Ills.  
White C. T. & Co. 54 Maiden la. New York.  
Widder J. H. Market st. c. 3rd st. San Francisco, Cal.  
Wilbor A. B. 854 Washington st. Boston, Mass.  
Wiley & Harris, 123 N. 7th street, Philadelphia, Pa.  
Williams C. P. 912 Sansom st. Philadelphia, Pa.  
Williamson D. D. 11 Dey street, New York.  
Wingate C. F. 119 Pearl st. New York.  
Wissman R. J. 1324 Cherry st. Philadelphia, Pa.  
With & Co. Springfield, Mass.  
Woodworth C. B. & Sons, Rochester, N.Y.  
Wright C. & Co. Detroit, Mich.  
Wright C. E. Marquette, Mich.  
Wright J. H. 620 Washington av. St. Louis, Mo.  
Wuth O. Patterson blk. 6th st. Pittsburgh, Pa.  
Wyman I. G. 142 Horatio st. New York.

**Contractors—Electric Light.**

*F.—Eclairage électrique (Entrepreneurs d').*

*G.—Elektrisches Licht—Contractoren.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*  
Fairman James F. Inventors' Institute, Cooper Union, New York.  
HAINES BROS. 55 Broadway, New York.  
Nason Preston C. Franklin, Mass. & San Juan, Porto Rico, West Indies.  
PALMER WIRE CO. PALMER, MASS. *see index to advertisers.*  
Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.  
ROEBLING J. A. SONS CO. Trenton, N.J. New York and San Francisco, Cal.  
STANDARD ELECTRICAL WORKS (successors to Post & Co.), Cincinnati, Ohio, *see index to advertisers.*

**Contractors—Telegraph**

*F.—Télégraphes—Entrepreneurs*

*G.—Telegraphenbau—Contractor*

DOW GEORGE Q. North Epping, *index to advertisers.*  
FAIRMAN JAS. F. Inventors' Institute Union, New York.  
HAINES BROS. 55 Broadway, New York, *index to advertisers.*  
Lewis & Mann, 220 State st. Boston, Mass.  
McNider Stanley, contractor for telegraph, and electric light companies, Central America.  
Moore J. L. & Co. r. 7, 23 & 25 Dey st.  
PALMER WIRE CO. PALMER, MASS. *index to advertisers.*  
Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
ROEBLING JOHN A. SONS CO. N.J. New York, and San Francisco  
STANDARD ELECTRICAL WORKS (successors to Post & Co.), Cincinnati, Ohio, *index to advertisers.*  
Subterranean Cable Co. 30 Court st. B.

**Contractors—Telephone**

*F.—Téléphones—Entrepreneurs*

*G.—Telephonbau—Contractors*

Fairman Jas. F. Inventors' Institute Union, New York.  
HAINES BROS. 55 Broadway, New York  
Moore J. L. & Co. r. 7, 23 & 25 Dey st. New York.  
PALMER WIRE CO. PALMER, MASS.  
Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
ROEBLING JOHN A. SONS CO. N.J. New York, and San Francisco  
STANDARD ELECTRICAL WORKS (successors to Post & Co.), Cincinnati, Ohio, *index to advertisers.*

**Copper Companies and Merchants**

*F.—Cuivre (Compagnies de).*

*G.—Kupfer-Gezellschaften.*

ANSONIA BRASS & COPPER CO. Cliff st. New York, *see index to advertisers.*  
Holmes, Booth & Haydens, New York, Philadelphia, Pa.; Waterbury, Conn.; and England.

**Coppersmiths.**

*F.—*

*G.—Kupfer-schmiede.*

Barenklau Gustav A. 172 Forsyth st. New York.  
Bishop & Deetjeen, 210 South st. New York.  
Buhler Fredk. 92 Eldridge st. New York.  
Burkhard Peter, 180 Grand st. New York.  
Burkhard Thomas, 125 White st. New York.  
Burkhard Etta, 45 Allen st. New York.  
Carpenter Allen, 103 N. Moore st. New York.



**Wires—continued.**

Reilly, 229 West st. New York.  
 Godfrey, 112 John st. New York.  
 Jetter, 148 E. 50th st. New York.  
 W. 213 Pearl st. New York.  
 urris, 13 Essex st. New York.  
 redk. C. 35 Desbrosses st. New York.  
 B. 127 av. D. New York.  
 lie, 128 S. 5th av. New York.  
**MERY & CO.** 105 Fulton st. New York  
*see index to advertisers.*  
 omas S. 65 Elizabeth st. New York.  
 Orth, 181 Prince and 122 Sullivan sts.  
 rk.  
 st, 232 W. 27th st. New York.  
 Harris, 47 Orchard st. New York.  
 enne, 44 W. 4th st. New York.  
 es & Co. 173 Christopher st. New York.  
 opold, 66 Centre st. New York.  
 mry & Co. 143 E. 31st st. New York.  
 liam, r. 92 Fulton st. New York.  
 rge W. 460 Greenwich st. New York.  
 ohn, steam copper works, 447 to 455  
 st. bet. ninth and tenth avs. and 273  
 New York.  
 William, 210 Centre st. New York.  
 n Chas. 189 E. Houston st. New York.

**Crucible Manufacturers.**

*F.—Creusets (Fab. de).*

*G.—Schmelztiegel-Fabr.*

H. 191 Greenwich & 95 Fulton sts. New York.  
 Son, 114 William st. New York.  
 r. W. 116 Nassau st. New York.  
 W. 6 N. 5th st. Philadelphia, Pa.  
 W. 13th st. New York.  
 ommerlad, 207 State st. New York.  
 nbago Co. Ltd. 520 Walnut st. Phila-  
 Pa.  
 H. & Co. Jersey City, N.J.  
 t Co. 129 Maiden la. New York.  
 Meng, 955 N. 3rd st. Phila. Pa.  
 Co. 21st st. c. Smallman st. Pittgh. Pa.  
**DIXON, CRUCIBLE CO.** 6 N. 5th st.  
 phia, Pa. and 68, Reade st., Jersey  
 J.  
 h Dalsell & Co. 355 Liberty st. Pitts-  
 'a.  
**MERY & CO.** 105 Fulton st. New York  
*see index to advertisers.*  
 Phillips, 126 Cross st. Boston, Mass.  
 A. 1537 N. Front st. Phila. Pa.  
 nufacturing Co. Taunton, Mass.  
 Co. 398 Bowery, New York.  
 Co. 1436 N. 6th st. Philadelphia, Pa.  
 3. 1334 Callowhill st. Philadelphia, Pa.  
 rucible Co. Taunton, Mass.  
 . 19th st. c. Callowhill st. Philadelphia,

**Designers and Draughtsmen.**

*F.—Dessinateurs.*

*G.—Zeichner.*

**CUMMING GEORGE**, 219 E. 18th st. New York.  
**HURDLE JULIAN A.** r. 6 Tribune bldgs. New  
 York. **INVENTORS' DRAWINGS MADE FROM**  
**ROUGH SKETCH, NO MODEL REQUIRED.**  
**MOTT S. D.** electrical expert r. 59 Astor house,  
 New York.  
**WARDEN JOHN H.** North Bend, Ohio.

**Directory (Electrical) Offices.**

*F.—Annuaire Electrique.*

*G.—Electrisches Adressbuch.*

**BERLY'S UNIVERSAL ELECTRICAL DI-**  
**RECTORY AND ADVERTISER**, Cumming  
 & Brinkerhoff, 219 E. 18th st. New York.  
*Send for Circulars.*  
 Fairman Jas. F. Inventors' Institute, Cooper  
 Union, New York.

**Dynamo and Magneto Electric Machine  
Manufacturers.**

*F.—Machines Dynamo et Magneto Electriques.*

*G.—Dynamo-Maschinen.*

**Arnoux Hockhausen Electric Co.** 217 and 221, E.  
 20th st. New York.  
**Ball C. E., N. E.** cor. 22nd st. and 2nd av.  
 New York.  
**BRUSH ELECTRIC CO.** (Parent Co.) 379  
 Euclid av. Cleveland, O., *see index to advertisers.*  
**COLBURN I. W. & CO.** 129 MAINE ST.  
 FITCHBURG, MASS. **MANUFACTURERS**  
**OF DYNAMO MACHINES FOR ELECTRIC**  
**LIGHTING AND ELECTRO PLATING.**  
**Eddy A. H.** 68 Market st. Hartford, Conn.  
**ELECTRICAL SUPPLY CO.** 17 Dey st. New  
 York, and Ansonia, Conn., *see index to*  
*advertisers.*  
**ELECTRO DYNAMIC CO. OF PHILADEL-**  
**PHIA**, 224 Carter st. Philadelphia, Pa., *see*  
*index to advertisers.*  
 Fairman Jas F. Inventors' Institute, Cooper  
 Union, New York. Manufacturer of Dynamo  
 machines for electro plating.  
**Fuller Electrical Co.** 44 14th st. New York and  
 Boston, Mass.  
 Gross F. 686-90 Craig st. Montreal.  
 Hanson, Van Winkle & Co. Newark, N.J. 92 &  
 94 Liberty st. New York.  
 Montreal Electrical Supply Co. Montreal.  
 Schuyler Electric Light Co. 64 Cedar st. New  
 York; factory, Hartford, Conn.  
**UNION ELECTRIC MANUFACTURING**  
**CO.** 7 & 9 Bond st. 145 Broadway & 86  
 Liberty st. New York, *see index to advertisers.*  
**U. S. ELECTRIC LIGHTING CO.** 59 and 61  
 Liberty st. New York, *see index to advertisers.*  
 Van Depoele Electric Light Co. 203 and 205 Van  
 Buren st. Chicago, Ills.

**Dynamo and Magneto Electric Machine  
Manufacturers—continued.**

Wallace & Sons, 89 Chambers & 71 Reade sts. New York.  
WOLFE L. W. & CO. 120 S. 14th st. cor. Douglas st. Omaha, Neb. Electro Magnetic Engines.  
Zucker & Levett, Chemical Co. 540, W. 16th st. New York.

**Earthenware Manufacturers for  
Electrical Purposes.**

*F.—Appareils en grès.*

*G.—Thonwaaren-Fabriken.*

Fairman James F. Inventors' Institute, Cooper Union, New York.

**Electric Alarms—Burglars, Fire, Safes,  
Ships, Trains, &c.**

*F.—Avertisseurs électriques.*

*G.—Electrische Alarm-Fabr.*

Applegate's Electric Floor Mat Alarm Manufacturing Co. Mills bldgs. Broad st. New York.  
Automatic Fire Alarm Co. 52 Kilby st. Boston, Mass.  
Automatic Signal Telegraph Co. 283 Franklin st. Boston, Mass. and 294 B'way, New York.  
Baldwin L. S. & Co. 75 Madison st. Chicago, Ills.  
Beckford E. S. 3 Lagrange cor. Washington st. Boston, Mass.  
Bosch Bros. 29 Mechanic st. Newark, N.J.  
BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
Boston Electric Protection Association, 56 Summer st. Boston, Mass.  
BOWEN WM. J. Norwalk, O. *see index to advertisers.*  
BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
Chantelouys E. 587-97 Craig st. Montreal.  
Clarke Marion, 25 W Lake st. Chicago, Ills.  
CLARK W. C. 205 Federal st. Portland, Me. *see index to advertisers.*  
Crane M. G. & Co. 267 Washington st. Boston, Mass.  
Douglas F. A. over 28 Main st. Lockport, N.Y.  
Dowden George A. 841 Broadway, New York.  
Edwards & Co. office 41 Beaver st. factory 4th av. and 138th st. New York.  
Electro-Medical Manufacturing Co. New York.  
Fairman James F. Inventors' Institute, Cooper Union, New York.  
FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
FULLER SETH W. 22 Milk st. Boston, Mass.  
Gamewell Fire Alarm Telegraph Co. (Joseph W. Stover, pres.) 115 Congress st. Boston, Mass. and 1½ Barclay st. New York.

**Electric Alarms—Burglars, Fire  
Ships, Trains, &c.—continued**

Goodrich & Moore, 180 Main st. Buffalo  
Harbert Edw. E. & Co. 159 La Salle st. Ills.  
Hazzer E. W. 33 Murray st. New York  
Heisler Electric Bell & Burglar Alarm to 817 S. 7th st. St. Louis, Mo.  
Hill Burglar Alarm Co. 346 W 14th York.  
Holmes' Burglar Alarm Telegraph Broadway, New York.  
Holmes E. T. & Co. 342 Washington st. Mass.  
HOLTZER CHAS. W. Brookline, Mass. *to advertisers.*  
Independent Electric Co. 1324 Chestnut Philadelphia, Pa.  
Kerner Electric Burglar Alarm Co. 17shire st. Boston, Mass.  
Lanc & Melcher, 357 Washington st. Boston  
LONGSTREET J. H. 9 Barclay York, *see index to advertisers.*  
Mason W. S. Attleborough, Mass.  
Mitchell, Robert & Co. 672 Craig st. Montreal  
Montreal Electrical Supply Co. Montreal  
Moses T. Crane & Co. 267 Boston st. New York Electric Matting Co. 15 Broadway  
Newman A. G. 1180 Broadway & 17 V New York. (Successor to Newman & Partrick & Carter, 114 S. 2nd st. Philadelphia)  
Pearson & Jones, 79 John st. New York  
PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*  
Pool A. A. & Co. 55 N. J. R. R. av. New York  
Pride, Fraleigh & Kyle, 23 & 25 Bay York.  
REDDING JEROME & CO. 30 H. Boston, Mass. *see index to advertisers.*  
Rogers H. 119 Fulton st. New York.  
Roper & Co. 184 E 119th st. New York  
ROUSSEAU D. 138th st and 4th av. Broadway, New York.  
SCHOOLEY W. D. Richmond, Ind.  
Smith, Bridge & Co. 6 W 14th & 3 W 13th York.  
Smith & Rhodes' Electric Co. Limited clay st. New York.  
SMITH T. J. 81 3rd st. (two doors from Brooklyn, E.D. N.Y.)  
Snyder J. P. 96 Fulton st. New York.  
STANDARD ELECTRICAL WORKS (sors to Post & Co.) Cincinnati, O. *to advertisers.*  
Suffolk Electric Manufacturing Co. 21 st. Boston, Mass.  
Union Electric Works, 126 Clark st. Chicago (Raslandell, propr.)  
UNION ELECTRIC MANUFACTURING 7 & 9 Bond st.; 86 Liberty st.; & 1 way, New York, *see index to advertisers.*  
United States Electric Fire Alarm (graph) 72 Maiden la. New York.

**Alarms—Burglars, Fire, Safes, ps, Trains, &c.—continued.**

RE ALARM TELEGRAPH CO. 106 erty st. Utica. Albany br. 25 Stauben y, N.Y. *see index to advertisers.*  
ELECTRIC CO. New York, Chicago, anapolis, Ind. and Boston, Mass., *see advertisers.*  
V. & Co. 120 S. 14th st. cor. Douglas s, Neb.  
dt & Co. 106 St. Mark's pl. New

**Annunciators and Call Bells.**

F.—*Arertisseurs electriques.*  
F.—*Electrische Hausglocken.*  
Electric Manufacturing Co. 90 Lake st. Ills.  
nest, 103 3rd av. Pittsburgh, Pa.  
n, 108 Liberty st. New York.  
S. 3 La Grange cor. Washington st. Iass.  
22 Union sq. 4th av. side, New York.  
ELECTRIC CO. 550 Washington st. Iass. *see index to advertisers.*  
WILLIAM J. Norwalk, O. *see index to*  
LECTRIC CO. (Parent Co.) 379 enue, Cleveland, Ohio, *see index to*  
C. 205 Federal st. Portland, Me.  
A. over 28 Main st. Lockport, N.Y.  
Co. 41 Beaver st. factory, 4th av. and New York.  
ical Mnfg. Co. 157 E. 81 st. New  
s. F. Inventors' Institute, Cooper ew York.  
M. D. 12 Brattle st. Boston, Mass.  
nciator Co. 73 Cornhill st. Boston,  
ANN A. F. 1226 Chestnut st. ia, Pa. *see index to advertisers.*  
ETH W. 22 Milk st. Boston, Mass.  
Moore, 180 Main st. Buffalo, N.Y.  
Co. 38 Chardon st. Boston, Mass.  
M. 13 Kilby st. Boston, Mass.  
ard E. & Co. 159 La Salle st. Chicago,  
tric Bell & Burglar Alarm Co. St.  
glar Alarm Telegraph Co. 518 Broad- York.  
HAS W. Brookline, Mass. *see index rs.*  
idreas, 309 N 3rd st. St. Louis, Mo.  
her, 71 Sudbury st. Boston, Mass.  
ET J. H. 9 Barclay st. New York, *advertisers.*  
V. 22 New Church st. New York  
G. 1180 B'way & 17 W. 28th st. New

**Electric Annunciators and Call Bells—  
continued.**

Ostrander W. R. & Co. 19 Ann st. New York.  
Partrick & Carter, 114 S 2nd st. Philadelphia, Pa.  
Pearce & Jones, 79 John st. New York.  
PINKHAM & SEAL, 38 Hudson st. Phila- delphia, Pa. *see index to advertisers.*  
Plumb C. 100 Niagara st. Buffalo, N.Y.  
REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*  
ROUSSEAU D. 138th st. & 4th av. office 181 Broadway, New York.  
SCHOOLEY W. D. Richmond, Ind.  
Shute & Talbott, Atlantic av. & Oliver st. Boston, Mass.  
STANDARD ELECTRICAL WORKS, Cincin- nati, Ohio, *see index to advertisers.*  
Smith & Rhodes Electric Co. Limited, 37 Barclay st. New York.  
Stetson A. H. (buttons for) Brookline, Mass.  
UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st. New York.  
WESTERN ELECTRIC CO. New York, Chi- cago, Ills., Indianapolis, Ind. and Boston, Mass. *see index to advertisers.*  
WOLFE L. W. & CO. 120 South 14th st. cor. Douglas st. Omaha, Neb.

**Electric Apparatus for Lighting Gas.**

F.—*Appareils Electriques pour Allumer le Gaz.*  
G.—*Electrische Apparate zum Anzünden des Gases.*  
BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
BOWEN W. J. Norwalk, O. *see index to adver- tisers.*  
BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio. *see index to advertisers.*  
Cincinnati Electric Gas Lighting Co. Cincinnati, O.  
CLARK W. C. 205 Federal st, Portland, Me. *see index to advertisers.*  
Douglas F. A. over 28 Main st, Lockport, N.Y.  
Edwards & Co. 41 Beaver, factory 4th av. and 138th st. New York.  
Electric Gas Lighting Co. 45 Milk st. Boston, Mass.  
ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
Fairman Jas. F. Inventors' Institute, Cooper Union, New York.  
FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
FULLER SETH W. 22 Milk st. Boston, Mass.  
Heisler Electric Light Co. St. Louis, Mo.  
Holmes' Burglar Alarm Telegraph Co., 518 B'way, New York.  
HOLTZER C. W. Brookline, Mass. *see index to advertisers.*  
N. W. Electric Gas Lighting Co. 134, Dearborn & 77 Clark sts. Chicago, Ills.  
PINKHAM & SEAL, 38 Hudson st. Philadel- phia, Pa. *see index to advertisers.*

**Electric Apparatus for Lighting Gas—**

*continued.*

Portable Electric Light Co. 28 Water st. Boston, Mass.  
 Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.  
 REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*  
 ROUSSEAU D. 4th av. nr. 138th st. New York, Office 181 B'way, bet. Cortlandt & Dey sts. New York.  
 SCHOOLEY W. D. gas lighter and extinguisher, Richmond, Ind.  
 STANDARD ELECTRICAL WORKS (successor to Post & Co.) Cincinnati, Ohio, *see index to advertisers.*  
 UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st.; 86 Liberty st.; & 14½ Broadway, New York, *see index to advertisers.*  
 WESTERN ELECTRIC CO. Chicago, Ills. New York, Indianapolis, Ind. and Boston, Mass. *see index to advertisers.*

**Electric Appliance Makers.**

*F.—Appareils électriques.*

*G.—Fabrikanten von electrischen Artikeln.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 Douglas F. A. over 28 Main st. Lockport, N.Y.  
 Edson's Speed and Pressure Recording and Alarm Gauges, office 77 Liberty st. New York.  
 Electric Plaster Co. 142 Fulton st. New York.  
 Pall Mall Electric Association of London, England; office, 842 Broadway, New York.

**Electric Bell Fitters and Contractors.**

*F.—Sonneries électriques.*

*G.—Electrische Glocken.*

Beile M. 1019 Fulton st. near Grand av. Brooklyn, N.Y.  
 BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
 Fairman Jas. F. Inventors' Institute, Cooper Union, New York, *see index to advertisers.*  
 FLEISCHMANN A. F. 1226 Chestnut st. Phila. Pa. *see index to advertisers.*  
 FULLER SETH W. 22 Milk st. Boston, Mass.  
 Harbert Edw. E. & Co. 159 La Salle st, Chicago, Ills.  
 Partrick & Carter, 114 S. 2nd st. Philadelphia, Pa.  
 Pickard E. L. 15 Water st. Boston, Mass.  
 Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.  
 Richter G. F. 4 W. 19th st. New York.  
 SCHOOLEY W. D. Richmond, Ind.  
 STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*

**Electric Bell Manufacture**

*F.—Sonneries électriques (Fab.)*

*G.—Electrische Glocken-Fabriken*

American Bell Telephone Co. 96 Milk Mass.  
 Bahr & Zahn, 108 Liberty st. New York  
 BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
 BOWEN WM. J. Norwalk, O. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 Chantelouys E. 587-97 Craig st. Montreal  
 CLARK W. C. 205 Federal st. Portland, *see index to advertisers.*  
 Davis & Watts, monument, cor. Buremore, Md.  
 Douglas F. A. over 28 Main st. Lockport  
 Edwards & Co. 4 av. and 138th st. New York  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
 Fairman Jas. F. Inventors' Institute Union, New York.  
 FLEISCHMANN A. F. 1226 Chestnut st. Phila. Pa. *see index to advertisers.*  
 Fromo T. J. 94½, Front st E. Toronto  
 FULLER SETH W. 22 Milk st. Boston  
 Harbert Edw. E. & Co. 159 La Salle st. Chicago, Ills.  
 Heisler Electric Light Co. St. Louis,  
 Holmes' Burglar Alarm Telegraph Broadway, New York.  
 HOLTZER CHARLES W. Brooklyn, *see index to advertisers.*  
 Martin J. M. 2080 Washington st. Boston  
 Meserole A. V. 22 New Church st. New York  
 Montreal Electrical Supply Co. Montreal  
 Newman A. G. 1180 Broadway & 17th st. New York. Successor to Newman  
 Partrick & Carter, 114 S. 2nd st. Philadelphia, Pa. *see index to advertisers.*  
 PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*  
 Plumb C. 100 Niagara st. Buffalo, N. Y.  
 Post & Co. Cincinnati, O.  
 Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.  
 REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*  
 ROUSSEAU D. 4th av. near 138th st. New York, Office 181 B'way, between Cortlandt & Rumsay & Co. 93 Liberty st. New York  
 Smith T. J. 81 3rd st. (2 doors from Brooklyn, E.D. N.Y.)  
 STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*  
 Stearns & George, 37 Pearl st. Boston  
 THE CHARLES WILLIAMS JAMES CO. OF THE WESTERN ELECTRIC Co. Court st. Boston, Mass. *see index to advertisers.*  
 UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st.; 86 Liberty st.; & 14½ Broadway, New York, *see index to advertisers.*



**Bell Manufacturers—continued.**

N ELECTRIC CO. New York, Cincinnati and Boston, *see index to advertisers.*

W. & Co. 120 South 14th st, cor. st. Omaha, Neb.

E. 160 W. 27th st. New York (pneumatics).

**Electric Blasting Apparatus.**

ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

A. F. 186 Devonshire st. Boston, Mass. Rand Powder Co. 29 Murray st. New York.

H. 25 Congress st. Boston, Mass.

**Electric Clocks & Synchronization.**

—*Horloges électriques (Fab. d').*

—*Electricische Uhren-Fabrikanten.*

ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

Electric Clock Co. Cincinnati, O. James F. Inventors' Institute, Cooper Union, New York.

SETH W. 22 Milk st. Boston, Mass. Electric Light Co. St. Louis, Mo. Leigh & Kyle, 23 & 25 Dey st. New York.

is, Albany, Ga.

U D. 138th st. and 4th av. Manufacturing office 181 B'way, New York.

Time Co. New Haven, Conn. RD ELECTRICAL WORKS, Cincinnati, *see index to advertisers.*

LEGRAPH CO. Temple ct. Beekman York, *see index to advertisers.*

N ELECTRIC CO. New York, Indianapolis, and Boston, *see index to advertisers.*

**Electric Companies.**

—*Compagnies électriques.*

—*Gesellschaften für Electricität.*

Electric Co. 58 New Church st. New York.

Electric Co. Boston, Mass. & New Conn.

ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

Electric Co.

E. Ernest Caduc Stearns (electrician).

**Electric Companies—continued.**

Secretary and Treasurer—Geo. J. Morse

Head-quarters—141 Franklin st. Boston, Mass.

Keith Electric Co. 237 Broadway, New York.

Knudson Electric Co. Ltd. 39 Nassau st. New York.

Rhode I. Electric Light Co. 24 Butler ex. Providence, R.I.

Union Electric Construction Co. 43 Montgomery st. Jersey City, N.J.

**Electric Lamp Manufacturers—Arc.**

F.—*Lampes électriques à Arc.*

G.—*Electricische Lampen-Arc.*

Britton Edward E. 44 Court st. Brooklyn, N.Y.

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland O. *see index to advertisers.*

Fairman James F. Inventors' Institute, Cooper Union, New York, *see index to advertisers.*

Fuller Electrical Co. 44 East 14th st. (Wheeler & Wilson building), Union sq. New York.

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

SCHOOLEY W. D., Richmond, Ind.

Schuyler Electric Light Co. 64 Cedar st. New York. Factory—Hartford, Conn.

UNITED STATES ELECTRIC LIGHTING CO. 59 and 61 Liberty st. New York, *see index to advertisers.*

UNION ELECTRIC MANFG. CO. 7 and 9, Bond st. New York, *see index to advertisers.*

Van Depoele Electric Light Co. 203 and 205 Van Buren st Chicago, Ills.

**Electric Lamp Manfs.—Incandescent.**

F.—*Lampes électriques à Incandescence.*

G.—*Electricische Lampen-Glühlucht.*

Britton Edward E. 44 Court st. Brooklyn N.Y.

BRUSH ELECTRIC Co. (Parent Co.), 379 Euclid av. Cleveland, O. *see index to advertisers.*

Edison Lamp Co. Newark, N.J.

Fairman James F. Inventors' Institute, Cooper Union, New York, *see index to advertisers.*

SWAN INCANDESCENT ELECTRIC LIGHT CO. 853 B'way, New York, *see index to advertisers.*

**Electric Light Apparatus Manufacturers.**

F.—*Appareils pour l'éclairage électrique.*

G.—*Apparate für Electricches Licht.*

BERGMANN & CO. 292 to 298 av. B. cor. 17th st. New York, *see index to advertisers.*

BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, O. *see index to advertisers.*

FAIRMAN JAMES F. Inventors' Institute, Cooper Union, New York.

HOLTZER CHARLES W. Brookline, Mass. *see index to advertisers.*

## Electric Light Apparatus Manufacturers

—continued.

Schuyler Electric Light Co. 64 Cedar st. New York. Factory—Hartford, Conn.  
 UNION ELECTRIC MANFG. CO. 7 and 9, Bond st. 145 Broadway and 86 Liberty st. New York.  
 Van Depoele Electric Light Co. 203 & 205 Van Buren st. Chicago, Ills.

## Electric Light Companies.

(See List of Companies and Capital.)

*F.—Eclairage électrique (Compagnies d').*

*G.—Gesellschaften für elektrische Beleuchtung.*

Agencies and Companies of the Brush Electric Light in the United States, and some of the agencies abroad:—

Akron Brush Electric Light & Power Co. Akron, O.  
 Alpena Electric Light Co. Alpena, Mich.  
 Albany Electric Illuminating Co. 71 Trinity pl. Albany, N.Y.  
 Albuquerque Electric Light Co. Albuquerque, New Mexico.  
 Allegheny County Light Co. 11, 13 & 15 Virgin al. bet. Wood & Liberty sts. Pittsburgh, Pa.  
 American Electric & Illuminating Co. 28 School st. Boston, Mass.  
 American Electric Light Co. 58 New Church st. New York. Capital stock \$500,000, 10,000 shares. Inventors, Bohn, Bernstein, Moffatt & Chichester. This Co. has both Incandescent and Arc Lights.  
 American Electric Light Co. 540 W 16th New York. Capital \$400,000 in 20,000 shares. Inventor and electrician, H. J. Muller; chief promoter and capitalist, Alex. Levett.  
 AMERICAN ELECTRIC LIGHT CO. New Britain, Conn. & Boston, Mass. (Thompson-Houston system).  
 American Electric Underground Co. 216 S 3rd st. Philadelphia, Pa.  
 American Magneto-Electric Light Co. 39 B'way, New York.  
 Anglo-American Brush Electric Light Co. Lim. Belvedere rd. Lambeth, London, S.E., England.  
 Arnoux Electric Co. 227 E 20th st. New York. Capital stock \$100,000 in 1,000 shares, chief financial broker, Fredk. A. Potts, 110 Broadway, New York, electrician & inventor Arnoux.  
 Arnoux Electric Light Co. 68 Sears bldgs. Boston, Mass.  
 Atlantic & Pacific Electric Light Manufacturing Co. Camden, N.J. (inventors Franz Rabl & H. C. Sample).  
 Barrow Forbes & Co. Mexico, Mex.  
 Beers & Co. 163 W. 29th st. New York.  
 Bernstein Electric Lighting Mfg. Co. 41 Arch st. Boston, Mass.  
 Blanchard Light & Power Co. cor. Quay & West sts. Brooklyn, N.Y.

## Electric Light Companies—contd.

BRUSH ELECTRIC CO. 379 Euclid land, O. (Parent Company).  
 Brush Electric Co. 7 South st. Baltimore  
 Brush Electric Lighting Co. 209 Wall Roger's bldg. Rooms 21 & 22, Boston  
 Brush Electric Light & Power Co. Buffalo  
 Brush Electric Light Co. 6 & 8 W. Buffalo, N.Y.  
 Brush Electric Light & Power Co. Butte Ter.  
 Brush Electric Light Co. Chattanooga,  
 Brush Electric Light & Power Co. Columbus  
 Brush Electric Light Co. 80 to 88 Chicago, Ills.  
 Brush Electric Light Co. 317 Plum nati, O.  
 Brush Electric Light & Power Co. 71 Cleveland, O.  
 Brush Electric Light Company, 81 and Detroit, Mich.  
 Brush Electric Light & Power Co. Galv.  
 Brush Electric Light & Power Co. Helena  
 Brush Electric Light & Power Co. Indianapolis.  
 Brush Electric Light Co. Louisville, Ky.  
 Brush Electric Light & Power Co. Memphis  
 Brush Electric Light & Power Co. Tenn.  
 BRUSH SWAN ELECTRIC LIGHT N.E. 853 Broadway, New York.  
 BRUSH ELECTRIC ILLUMINATING 853 Broadway, cor. 14th st. New York  
 Brush Electric Light & Power Co. Niagara.  
 Brush Electric Light Co. Johnson st. and 21st sts. Philadelphia, Pa.  
 Brush Electric Light Co. Rochester, N.Y.  
 Brush Electric Light & Power Co. Savannah.  
 Brush Electric Assn. 404 Market st. St. Louis.  
 Brush Electric Light & Power Co. Topeka  
 Brush Electric Light & Power Co. Aurora  
 Brush Electric Light & Power Co. Overland  
 Brush Electric Light & Power Co. Kansas City  
 Brush Electric Light & Power Co. La Crosse  
 Brush Electric Light Co. Eau Claire, Wis.  
 Brush Electric Light & Power Co. Macomb  
 Brush Electric Light Co. Mobile, Ala.  
 Brush Electric Light Co. Montgomery.  
 Brush Electric Light Co. Tipton, Ia.  
 Brush Electric Light Co. Fairfield, Ia.  
 Brush Swan Electric Light Co. Cheyenne  
 Brush Electric Light Co. Rock Island.  
 Brush Swan Electric Light Co. Tuscon  
 Brush Electric Light & Power Co. Atlanta  
 Brush Electric Light & Power Co. Knoxville  
 Brush Electric Light & Power Co. Los Angeles  
 Brush Electric Light Co. Baltimore, Md.  
 Brush Electric Light Co. 5 Pemberton 5 Lancaster st. Boston, Mass.  
 Brush Electric Light Co. 118 La Salle st. Ills.  
 Brush Electric Light Co. Cleveland, O.  
 Brush Electric Light Co. Columbia, S.C.  
 Brush Electric Light Co. Topeka, Kan.

**Light Companies—continued.**

Electric Light & Power Co. Montgomery,  
 Pa.  
 Electric Light Co. Dayton, O.  
 Electric Light Co. Virgin and Wood sts.  
 gh, Pa.  
 Electric Light Co. Providence, R.I.  
 Electric Light Co. Richmond, Va.  
 Electric Light Co. Williamsport, Pa.  
 Electric Lt. & Power Co. St. Joseph, Miss.  
 Electric Light & Power Co. St. Louis, Mo.  
 Electric Light Co. of N.E. 209  
 gton st. Boston, Mass.

brauff, genl. agt. Swan Incandescent  
 : Light Co. for the Pac. Coast, care  
 Mt. E. L. Co. Salt Lake City, Utah.  
 tiss, 379 Euclid av. Cleveland, O.  
 Electric Light Co. 17 St. Ann's bldgs.  
 incisco, Cal.  
 Electric Light Co. 220 to 226 Jessie st.  
 incisco, Cal.  
 i Electric and Calcium Light Co. 365  
 . Cincinnati, O.  
 i Electric Light Co. 161 W. Pearl st.  
 ati, O.  
 Electric Light Co. Toledo, O.  
 Electric Co. Denver, Col.  
 Electric Signal Co. 340 3rd av. New  
 J. I. Conklin jr. president, Theo.  
 secretary and treasurer.  
 ut Electric Light Co. New Haven, Conn.  
 ted Electric Light Co. Brooklyn, N.Y.  
 al Electric Light Co. room 48, 115  
 ay, New York.

Whitney Electric Co. James Ayars  
 nt and manager, factory Fulton st. cor.  
 erson st. office 155 La Salle st. Chicago,

Electric Light and Motive Power Co.  
 l st. New York.  
 Electric Light and Motive Power Co.  
 er H. F. Averill, 120 Broadway, New  
 Capital stock \$500,000; 50,000 shares.  
 ctic Light Co. 115 Broadway, New  
 nd Greenville, N.J.  
 ctic Light Co. Dallas, Texas.  
 Lester & Morris, Camden, N.J.  
 Electric Light Co. 97 Fulton st. New

Electric Manufacturing Co. Middletown,  
 nd room 99 Boreel bldg. 115 Broadway,  
 ork.

Electric Light Co. 82 Devonshire st.  
 , Mass.

CO. FOR ISOLATED LIGHTING,  
 al office 65 5th av. New York, Major S.  
 on president, E. H. Johnson vice-presi-  
 F. S. Hastings treasurer, M.F. Moore,  
 r Borden general manager, Henry Alden  
 Baltimore manager New England de-  
 nt, George C. Fairbanks agent for  
 und and Western Pennsylvania.

**Electric Light Companies—continued.**

Edison Co. for Isolated Lighting, 6 Ledger bldg.  
 6th and Chestnut sts. Philadelphia, Pa. Agency  
 —States of Pennsylvania, New Jersey and  
 Delaware.

Edison Electric Illuminating Co. of New York,  
 65 5th av. New York, Norvin Green president,  
 S. B. Eaton vice-president, F. S. Hastings  
 treasurer and acting secretary.

Edison Electric Illuminating Co. of Lawrence,  
 Mass. F. E. Clarke president, E. H. Lord  
 secretary, James H. Eaton treasurer.

EDISON ELECTRIC LIGHT CO. 65 5th av.  
 New York, S. B. Eaton president, F. S. Hastings  
 treasurer and acting secretary.

Edison Electric Light Co. 257 Washington st.  
 Boston, Mass.

Edison Electric Light Co. of Europe, Limited,  
 65 5th av. New York.

Edison Spanish Colonial Light Co., capital stock  
 \$100,000, 1,000 shares. To work Edison's in-  
 ventions in Cuba and other Spanish colonies.

Electric Gas Lighting Co. 45 Milk st. Boston,  
 Mass.

Electric Illuminating Co. Albany, New York.

Electric Light Co. 180 A st. Washington, D.C.

Electric Mfg. Co. 1020 Arch st. Phila. Pa.

Elgin Electric Light Co. Elgin, Ills. G. S.  
 Bowen, President; G. E. Bowen, Secretary  
 and Treasurer.

Evansville Brush Electric Light and Power Co.  
 205 upper 3rd st. Evansville, Ind.

Excelsior Electric Co. 68 Duane st. New York.

Fargo Electric Light and Power Co. Fargo, Da.

Fergus Brush Electric Co. Fergus Falls, Minn.

Fuller Electrical Co. 44 14th st. New York,  
 with branches in Boston and Worcester, Mass;  
 Providence, R.I.; Hartford, Conn.; Brooklyn,  
 N.Y.; Jersey City and Patterson, N.J.; Phila-  
 delphia, Lancaster and Scranton, Pa.; Syracuse,  
 Rochester and Buffalo, N.Y.; Pittsburgh, Pa.;  
 Wheeling, W. Va.; Steubenville, Xenia and  
 Dayton, O.; Grand Rapids, Mich. Chicago;  
 Springfield & Belleville, Ills. & St. Louis, Mo.

GRAMME ELECTRIC LIGHT CO. 115  
 Broadway, New York.

Grand Rapids Electric Light and Power Co.  
 Grand Rapids, Mich.

Hathaway Electric Light and Power Co. 33 Astor  
 h. New York and 46 School st. Boston, Mass.

HEISLER ELECTRIC LIGHT CO. 809 to 817  
 S. 7th st. St. Louis, Mo.

Higgs Electric Light and Power Co. New York.  
 Capital stock \$500,000, 100,000 shares. Elec-  
 trician Puget Higgs.

Hill & Jordan Columbus, Ga.

Horne Fredk. W. 92 La Salle st. Chicago, Ills.

Houston Electric Light and Power Co. Houston,  
 Texas.

Houston Thomson Electric Light Co. 631 Arch  
 st. Philadelphia, Pa.

Hussey Electric Co. 46 Bond st. New York. In-  
 ventor and electrician C. A. Hussey, chief pro-  
 motor A. S. Dodd.

**Electric Light Companies—continued.**

Jablochhoff Electric Lighting Co. 154 Nassau st. New York.  
 Jablochhoff Electric Lighting Co. of N.E. 18 Post office sq. Boston, Mass.  
 Keith Electric Co. 237 Broadway, New York.  
 Kurezyor Pedro, Electric Light Co., Rio de Janeiro, Brazil, S. America.  
 Langley Electric Light Co. Ann Arbor, Mich. Inventor and electrician Prof. J. W. Langley.  
 Leggett W. W. 88 Griswold st. Detroit, Mich.  
 Levett Muller Electric Light Co. 1003 Chestnut st. Phila. Pa.  
 Light and Force Co. room 11 and 12. 234 Broadway, New York.  
 Lowell Electric Light Co. Lowell, Mass.  
 Lugo Dynamo Electric Co. Washington sq. New York, capital stock \$100,000, 1000 shares. Inventor and electrician Ozario Lugo, chief promoters and capitalists S. L. M. Barlow and Charles G. Francklyn.  
 Manchester Electric Light Co. Manchester, N.H.  
 Markland Electric Light Power Co. 30 Broad st. room 86, New York. Capital stock \$600,000 600,000 shares.  
 Markland Electric Light and Power Co. 30 Broad st. (room 87) New York.  
 Maxim Electric Light Co. 7th av. cor. Smithfield st. Pittsburgh, Pa.  
 Maxim Electric Light and Power Co. 617 Arch st. Philadelphia, Pa.  
 Metropolitan Electric Light and Power Co. 15 Cortlandt st. New York.  
 Middletown Electric Light Co. Middletown, O.  
 Michigan Iron Works Light & Power Co. Grand Rapids, Mich.  
 Minnesota Brush Electric Co. Minneapolis, Minn.  
 Monopole Electric Light Co. Troy, N.Y. owners of patents to Clinton M. Bull and C. A. Seeley.  
 Mutual Electric Light and Supply Co. 37 Wall st. New York. Capital Stock \$500,000, 200,000 shares. This is the Co. owning C. E. Long's patents.  
 National Underground Electric Co. 216½ Walnut st. Philadelphia, Pa.  
 Newark Electric Lt. & Power Co. Newark, N.J.  
 N.E. Western Electric Light Co. 267 Washington st. Boston, Mass.  
 New York & Brooklyn Electric Light Co. 22 Cortlandt st. New York.  
 New York Electric Light Association, 23 Dey st. room 5. Capital stock \$300,000, 3,000 shares. A. Wirsching and Leo Daft inventors, factory Greenville, N.J., laboratory 32 Centre st. New York, W. M. Lendrum, Leo Daft and Hugo Rothschild trustees.  
 New York Electric Light Co. 185 5th av. and 10 Cortlandt st. New York, J. C. Chamberlin manager.  
 New York Elec. Motive Power Co. 13 Dey st. New York.  
 Ogden Electric Light Co. Ogden, Utah.  
 Olmsted Electric Light & Power Co. 7 Beekman st. New York.

**Electric Light Companies—contin**

Pacific Electric Co. 330 Gutta st. San F. Cal.  
 Penn. Elec. Lt. & Storage Co. 1001 Che Philadelphia, Pa.  
 Portable Co. 128 Pearl st. New York.  
 Portable Elec. Lt. Co. 79 Water st. Bosto  
 Portland Electric Light Co. Portland, M  
 Post & Co. 161 W. Pearl st. Cincinnati,  
 Potter Jotham, c/o Messrs. Walsh, Ha  
 Yokohama, Japan.  
 Power Light & Heating Co. Salt Lake Cit  
 Racine Elec. Lt. & Power Co. Racine, W  
 Redman George A. manager Brush Elec.  
 11 Wilders Arcade, Rochester, N.Y.  
 Rhode Island Elec. Lt. Co. rear 270  
 Providence, R.I.  
 Ridall & Ingold, 116 Market st. Pittaba  
 Rochester Electric Light Co. Rochester.  
 Rocky Mountain Elec. Lt. Co. Salt L. Ci  
 St. Paul Electric Light & Power Co. 1  
 Minn.  
 Salem Electric Light Co. Salem, Mass  
 Shannon, supt.)  
 San Jose Brush Electric Light Co. 284 Sa  
 st. r. 9, San Jose, Cal.  
 San Antonio Electric Co. San Antonio,  
 Schuyler Electric Light Co. 64 Cedar  
 York Factory, Hartford, Conn.  
 Shanghai Electric Co. Shanghai, China.  
 Sheehy R. J. Norfolk, Va.  
 Sheridan Electric Light Co. of New  
 Broadway, manufactory 138 Jane  
 York (capital \$500,000 in 10,000 shar  
 Smith & Rhodes Electric Co. Limited, 5  
 cor. 17th st. New York.  
 South Bend Electric Light Co. South B  
 South Western Brush Electric Light  
 Co. 38 Union st. New Orleans, La.  
 Springfield Electric Light Co. Springfi  
 Standard Electric Light Co. 211 Centra  
 York, patents of A. G. Holcombe.  
 Stockly C. E. 34 Chestnut st. Cleveland  
 Swift Electric Light Co. E. Saginaw, M  
 SWAN INCANDESCENTELECTRIC  
 CO. 853 Broadway, New York, *see*  
*advertisers.*  
 Swan Incandescent Electric Light  
 Hampden st. Boston, Mass.  
 Sweet John, 124 Dearborn st. Chicago,  
 THOMSON-HOUSTON ELECTRIC  
 Devonshire st. Boston, Mass.  
 Thompson-Houston Electric Light  
 & works 1426 Callowhill st. Philadel  
 Thompson-Houston North Western  
 Light & Power Co. of Chicago capital  
 Thos. S. Crapp, Lafayette, Ind.  
 Toledo Brush Electric Light Co. Toled  
 UNION ELECTRIC MANUFACTUR  
 31 Milk st. Boston, Mass. and 145 F  
 New York (Parker C. Chandler  
 Frank W. Jones vice-president & su  
 C. Andrews treasurer, Ralph V  
 business manager).



**Light Companies—continued.**

lobe Electric Light Co. 297 5th av. New  
apital stock \$6,000,000, 60,000 shares.  
or and electrician E. L. Morre).  
etric Illuminating Co. Charleston, Sc.  
ates Electric Light Co. Baltimore, Md.  
STATES ELECTRIC LIGHTING  
and 61 Liberty st. New York, *see*  
*advertisers.*  
ates Electric Lighting Co. Newark,  
ates Illuminating Co. 59 & 61 Liberty  
r York.  
oole Electric Lighting Co. 203 & 205  
ren st. Chicago, Ills. (inventor and elec-  
C. J. Van Depoele.)  
rmor Co. 99 Court st. Boston, Mass.  
O. Henck's Opera house, Cincinnati, O.  
Edison Light Co. Chicago, Ills. Con-  
g the States of Illinois, Iowa and Wis-  
Anson Stager president-gen. John M.  
vice-president, D. H. Loederbach trea-  
George H. Bliss general superintendent).  
Electric Light Co. Chicago, New  
Indianapolis and Boston.  
Electric Light Co. 328 Montgomery st.  
ancisco, Cal.  
Electric Light Co. Newark, N.J.  
Reflector Co. 70 Kilby st. (room 42)  
, Mass.

**Electric Light Fixtures and Fittings.**

*-Appareils pour la lumière électrique.*

*-Apparate für elektrische Beleuchtung.*

Pancoast Manufacturing Co. 70 Wooster  
Green sts. New York.  
S. & Co. 1293 Broadway, New York.  
Joseph S. 168 Centre st. New York.  
ANN & CO. 292 to 298 av. B. cor.  
t. New York, *see index to advertisers.*  
S ELECTRIC CO. 550 Washington st.  
t, Mass. *See index to advertisers.*  
& Hubbard Manufacturing Co. 21  
y st. and 26 Park pl. New York.  
ELECTRIC Co. (Parent Co.) 379 Euclid  
veland, Ohio. *See index to advertisers.*  
& Son, 129 Mercer st. New York.  
ham James, 151 W. 29th st. New York.  
on Thos. & Son 74 E 9th st. New York.  
Smith, 42 S 5th av. New York.  
Mfg. Co. 43 Chambers st. New York.  
Co. 194 Hester st. New York.  
n & Bros. 104 Centre st. New York.  
George H. & Co. 23 University pl.  
York.  
S. & Co. 1293 Broadway, New York.  
e Fredk. 7 W 4th st. New York.  
ELL, VANCE & CO. 836 & 838 Broad-  
72 E 13th & 503 W 24th sts. New York.  
*See index to advertisers.*

**Electric Light Fixtures & Fittings—  
continued.**

MOORE ALFRED F. 200 & 202 N 3rd st.  
Philadelphia, Pa. *See index to advertisers.*  
Oxley & Giddings 113 Walker st. New York.  
Palmers James F. & Son 47 University pl.  
New York.  
Patterson & Co. Limited, 17 W Houston st.  
New York.  
Royle Charles cor. Franklin & Centre sts. New  
York.  
Ryan, May & Latus, 38 Bleeker st. New York.  
Schapland Albert G. 209 Centre st. New York.  
Schneider, Campbell & Co. 7 Union sq. and 20  
E 15th st. New York.  
Standard Manufacturing Co. 9 Bond st. New  
York.  
Titsinks & Phillips, 207 Centre st. New York.  
Travis & Ferry 140 Greene st. New York.  
UNITED STATES ELECTRIC LIGHTING  
CO. 59 & 61 Liberty st. New York, *see index to*  
*advertisers.*  
Williams John 115 E. 13th st. New York.

**Electric Light Wiring.**

*F.—Fils pour la lumière électrique.*

*G.—Draht für elektrisches Licht.*

BERGMANN & CO. 292 to 298 av. B cor. 17th  
st. New York, *see index to advertisers.*  
BRUSH ELECTRIC CO. (Parent Co.) 379  
Euclid av. Cleveland, O. *See index to advertisers.*  
UNITED STATES ELECTRIC LIGHTING  
CO. 59 & 61 Liberty st. New York, *see index*  
*to advertisers.*

**Electric Locks.**

*F.—Serrures électriques.*

*G.—Elektrische Schlösser.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
New York.

**Electric Measuring Instrument Makers.**

*F.—Appareils servant aux mesures électriques.*

*G.—Elektrische Mass-Instrumente.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid  
av. Cleveland, Ohio. *See index to advertisers.*  
ELECTRICAL SUPPLY CO. 17 Dey st. New  
York, *see index to advertisers.*  
FAIRMAN JAMES F. Inventors' Institute,  
Cooper Union, New York. *See index to adver-*  
*tisers.*  
HOLTZER CHAS. W. Brookline, Mass. *see*  
*index to advertisers.*  
WESTERN ELECTRIC CO. New York,  
Chicago, Indianapolis and Boston, *see index*  
*to advertisers.*

**Electric Railways.**

*F.—*

*G.—*

Daft Electric Railway Co. New York and Greenville, N.J.  
Edison Electric Railway Co. Menlo Park. N.J.

**Electric Specialities Makers.**

*F.—*

*G.—*

Beile M. 1019 Fulton st. nr. Grand av. Brooklyn, N.Y.  
BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*  
FAIRMAN JAMES F. Inventors' Institute, Cooper Union, New York. *See index to advertisers.*  
FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

**Electric Street Lamp Manufacturers.**

*F.—Lampadaires pour l'éclairage électrique.*

*G.—Lampfosten für electrisches Licht.*

Alta Mfg. Co. 175 Washington st. Boston, Mass.  
Bartlett Lamp Manufacturing Co. 35 Howard st. New York.  
Benney John & Son 344 Atlantic av. Boston, Mass.  
Berry W. B. & Co. 70 North st. Boston, Mass.  
BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*  
Dietz R. E. 54 Fulton st. New York.  
Globe Gas Light Co. 77 Union st. Boston, Mass.  
Globe Street Lamp Co. Eagle av. cor. John st. Morrisania, N.Y.  
Patterson Co. Limited, 17 W Houston st. New York.  
SCHOOLEY, W. D. Richmond, Indiana.  
United States Street Lighting Co. 54 Kilby st. New York.

**Electric Switch Manufacturers.**

*F.—Commutateurs (Fab. de).*

*G.—Electriche Weichen.*

BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*  
Cowles C. & Co. Newhaven, Conn.  
POST & CO. S W cor. Pearl & Elm sts. Cincinnati, O.  
SCHOOLEY W. D. Richmond, Ind.  
STANDARD ELECTRICAL WORKS, Cincinnati, O., *see index to advertisers.*  
WESTERN ELECTRIC CO. New York, Chicago, Boston and Indianapolis, *see index to advertisers.*

**Electric Toys.**

*F.—Jouets électriques.*

*G.—Electriche Spielzeug.*

Bliss R. Manufacturing Co. Pawtucket, I  
FAIRMAN JAMES F. Inventors' I  
Cooper Union, New York, *See index t*  
*tisers.*  
McAllister T. H. 49, Nassau-st. New Yo  
Meyer Curt. W. 11 Dey st. New York.  
Novelty Electric Co. S W cor. 5th & 50  
sts. Philadelphia, Pa.  
Sun Manufacturing Co. 70 Duane st. Ne

**Electric Transmission of Pow**

*F.—Transmission électrique de Puiss*

*G.—Electriche Transmission der Kr*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, O. *see index to advertisers*  
ELECTRO DYNAMIC CO. OF I  
DELPHIA, 224 Carter st. Philadelpl  
*see index to advertisers.*

**Electrical Condensers Manufact**

*F.—Condensateurs électriques.*

*G.—Electriche Condensatoren.*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, Ohio. *See index to adre*  
FAIRMAN JAMES F. Inventors' I  
Cooper Union, New York. *See index t*  
*tisers.*  
MARSHALL, WM. 4 University Bldg  
York.  
Pride, Fraleigh & Kyle, 23 & 25 Dey  
York.

**Electrical Contractors and Dea**

*F.—*

*G.—Contractoren für Electricität.*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, O. *see index to advertisers*  
FLEISCHMANN A. F. 1226 Chest  
Philadelphia, Pa. *see index to advertisers*

**Electrical Glass Supplies.**

*F.—Verreries pour Electricité.*

*G.—Glas für electriche Apparate.*

BOSTON & SANDWICH GLASS CO. (C  
Brinkerhoff, agt.) Boston and 17 Mu  
New York, *see index to advertisers.*  
DEMUTH BROTHERS, 89 Walker s  
York.  
Gleason E. P. Manufacturing Co., Houst  
Mercer sts. New York.  
Hibbler & Rausch, Prince & Concord sts.  
lyn, N.Y.  
Meriden Flint Glass Works, Meriden, Co  
New Bedford Glass Works, New Bedford,  
N. E. Glass Works (W. L. Libby & S  
Federal Works E Cambridge, Boston, J  
1 P. O. sq. Boston, Mass.  
Union Glass Works (Gregory agent), Boston

**Electrical Instrument Makers.**

*F.—Appareils électriques.*

*G.—Electriche Instrumente.*

Oscar G. 162 William st. New York.  
Electric Brush Co. r, 11 Carlisle build-  
th st. cor. Walnut st. Cincinnati, O.  
Electric Co. 30 & 31 Chestnut st. Phila.  
a, Pa.  
Galvanic Co. 134 Madison st. Chicago,

nstein & Co. 300 n. 4th st. St. Louis, Mo.  
Electric Co. 227 E 20th st. New York.  
Zahn, 108 Liberty st. New York.  
s. E., n.e cor. 22nd st. and 382 2nd av.  
York.

ANN & CO. 292 to 298 av. B. cor. 17th  
w York, *see index to advertisers.*

& Adam, 220 n. 4th st. St. Louis, Mo.  
& Osborn, 23-25 N. J. R. R. av. Newark,

CHARLES L. 37 Pearl st. Boston, Mass.  
*see index to advertisers.*

ros. 29 Mechanic st. Newark, N.J.

N ELECTRIC CO. 550 Washington st.  
a, Mass. *see index to advertisers.*

Electric Co. (E. C. Perkins, agt.) 134  
minster st. Providence, R.I.

WM. J. Norwalk, O. *see index to  
sers.*

hn C. 203 W 49th st. New York.

ffray 63 Fulton st. New York.

Linscott, Farmington, Me.

mes, 257 & 259 Water st. Brooklyn, N.Y.

D. jr. 2008 Chestnut st. Philadelphia, Pa.  
Carlisle & Co. 180, Friendship st. Pro-  
e, R.I.

Reginald C. 180 Friendship st. Provi-  
R.I.

ELECTRIC CO. (Parent Co.) 379 Euclid  
and, av. Ohio. *See index to advertisers.*

A. & Sons, 76 Frankfort st. Cleveland, O.

J. H. & Co. 112 Liberty st. New York.

William H. 259 W 27th st. New York.

lard Rubber Co. 33 Mercer st. New York.

Payson Battery Co. 2 Chestnut st. Phila-  
a, Pa.

ia Electric Gas Lighting Co. 22 Kearny  
a Francisco, Cal.

ia Electric Light Co. 220 to 226 Jessie  
a Francisco, Cal.

ia Electrical Works, 134 Sutter st. San  
isco, Cal.

Pennsylvania Telephone Supply Co.  
msport, Pa.

Electric Belt Co. 123 Washington st.  
go, Ills.

Electric Manufacturing Co. 4 Rush st.  
go, Ills. and 88 East Lake st. New York.

Telegraph Supply Co. cor. of Washington  
arket sts. Chicago, Ills.

F. 181 Broadway, New York.

uis W. 91 Westminster st. Providence, R.I.

id Electrical Manufacturing Co. 91 West-  
er st. Providence, R.I.

**Electrical Instrument Makers—continued.**

Cornish T. E. 1111 Chesnut st. Philadelphia, Pa.

Cram J. S. 1205 Arch st. Philadelphia, Pa.

CUMMING & BRINKERHOFF, 219 E. 18th  
st, New York, *see index to advertisers.*

Dakin E. A. 219 Sansom st. San Francisco, Cal.  
Detroit Electrical Works, Detroit, Mich. & Boston,  
Mass.

Dowden Geo. A. 841 Broadway, New York.

Dye Battery & Pad Co. 33 Bromfield st. Boston,  
Mass.

Eastern Electric Mfg. Co. 115 Broadway, New  
York.

Eaton Mrs. E. A. 111 Adams st. Chicago, Ills.

Edison Electric Tube Co. 255 Pearl st. New York.

Edison T. A. Menlo Park, N.J.

Edwards & Co. 41 Beaver st. New York.

Electric Magnetic Belt Co. 25 Winter st. Boston,  
Mass.

Electric Mfg. Co. 1020 Arch st. Philadelphia. Pa.

Electric Patrol Indicator Co. 35 Broadway, New  
York.

Elec. Signal & Time Register Co. 32 Park pl.  
New York.

Electric Tube Co. 65 Washington. st. New York.

ELECTRICAL SUPPLY CO. Ansonia, Conn.  
& 17 Dey st. New York, *see index to advertisers.*

ELECTRO DYNAMIC CO. OF PHILA-  
DELPHIA, 224, Carter st. Philadelphia, Pa.  
*see index to advertisers.*

Electro Medical Mfg. Co. 157 E 81st, New York.

ELGIN TELEPHONE CO. (Wm. Hubbard,  
patentee), ELGIN (Kane Co.) ILLS. Elgin  
Telephone for private lines, &c.

FAIRMAN JAMES F. Inventors' Institute,  
Cooper Union, New York. *See index to adver-  
tisers.*

Fernald G. M. D. 12 Brattle st. Boston, Mass.

Ferrin Wm. F. 186 Devonshire st. Boston, Mass.

Finn Lightning Arrestor Co. Elysia, Ohio.

Fitch Frederick K. 40 Cortlandt st. New York.

FIX & HERMAN, 169, Fulton st. New York.

FLEISCHMANN A. F. 1226 Chestnut st. Phila-  
delphia, Pa. *see index to advertisers.*

Flemming O. 1009 arch st. Philadelphia, Pa.

Folken J. H. & Bros. 118 Montgomery st. San  
Francisco, Cal.

Foote A. R. S. 528 20th st. Washington, D.C.

Frank F. S. 167½ Wood st. Pittsburgh, Pa.

Freeman Bros. 37 Centre st. New York.

Fricke J. R. & Co. 150 Anderson st. Pittsburgh,  
Pa.

Fuller Electrical Co. 44 14th st. New York.

Fuller F. W. 419 Sacramento st. San Francisco,  
Cal.

Fuller Seth W. 22 Milk st. Boston, Mass.

Galvano Faradic Mfg. Co. 335 4th av. New York.

Garratt Electric Disc & Belt Co. 8 Hamilton pl.  
Boston, Mass.

Garrett George S. 3130 Chestnut st. Phila. Pa.

Glass J. 1413 Chesnut st. Philadelphia, Pa.

Greenwood Pottery Co. Trenton, N.J.

Griffin John L. 265 Broadway, New York.

Guch J. C. 18 Market st. San Francisco, Cal.

**Electrical Instrument Makers—continued.**

Guerant George M. 41 Centre st. New York.  
 Hall E. K. & Co. 163 Albany st. Boston, Mass.  
 Hall T. 19 Bromfield st. Boston, Mass.  
 Hampton Bros. 607 Mission st. San Francisco, Cal.  
 Hansen Van Winkle & Co. 92 and 94, Liberty st.  
 New York and Newark, N.J.  
 Harris A. C. & Co. Louisville, Ky.  
 Harbert Edw. E. & Co. 159 La Salle st. Chicago,  
 Ills.  
 Hatteroth & Russ, 321 Kearney st. San Francisco,  
 Cal.  
 Hazzer Edgar W. 33 Murray st. New York.  
 Hempler H. H. 453 Pennsylvania av. Washn. D.C.  
 Heylmann C. J. 298 Wt. Lake st. Chicago, Ills.  
 Hinds Chas. H. (gas lighting by electricity), 418  
 W. 27th st. New York.  
 Hoenack Paul, 193 Worth st. New York.  
 HOLTZER, C. W. Brookline, Mass. *see index to  
 advertisers.*  
 Hudson J. & W. 697 Broadway, New York.  
 Irach Francis, 204 E. 23rd st. New York.  
 Jack J. C. 18 Market st. San Francisco, Cal.  
 JONES C. E. & BRO. Carlisle bldgs. 51 W.  
 4th st. Cincinnati, O.  
 Kahl A. & Co. 13 Mercer st. Baltimore, Md.  
 Keim John H. 192 Broadway, New York.  
 KIDDER JEROME MANUFACTURING CO.  
 820 Broadway, New York, *see index to adver-  
 tisers.*  
 KINSMAN F. E. & CO. 145 Broadway & 86  
 Liberty, st. New York.  
 Kirkhoff Wm. A. 30 S 12th st. Philadelphia, Pa.  
 Lannert J. A. 31 Prospect st. Cleveland, O.  
 Lazell J. L. & Co. 48 Centre st. New York.  
 LECLANCHÉ BATTERY CO. 149 W. 18th st.  
 New York, *see index to advertisers.*  
 Leuschner E. 189 Vine st. Cincinnati, O.  
 Lockwood & Foster. electrical instrument manu-  
 facturers, 21, Park row, New York.  
 LONGSTREET JOHN H. 9 Barclay st. New  
 York, *see index to advertisers.*  
 Low A. S. 259 W Madison st. Chicago, Ills.  
 Lundbeg & Dilg, Oregon Electrical Works, Port-  
 land, Oregon.  
 Lyman A. B. & Co. 36 No. Water st. Cleveland, O.  
 McCabe J. H. & Co. 1783 Broadway & 304 W  
 41st st. New York.  
 McIntosh Galvanic & Faradic Battery Co. 192-  
 194 Jackson st. Chicago, Ills.  
 Mathews D. S. D. & Co. 84 5th av. Chicago, Ills.  
 Maxim Electric Light & Power Co. 617 Arch st.  
 Philadelphia, Pa.  
 Maynard G. C. 1413 G st. Washington, D.C.  
 Meigs & Aberrill, 218 State st. Chicago, Ills.  
 Moyer Curt W. 11 Dey st. New York.  
 Michigan Carbon Works, Detroit, Mich.  
 Morey L. G. 1413 Chestnut st. Philadelphia, Pa.  
 N. Y. Dynamo Electric Manufacturing Co. 907  
 Broadway, New York.  
 N. E. Weston Electric Light Co. 267 Washington  
 st. Boston, Mass.  
 New York Wood Turning Co. 134th st. n. 3rd  
 av. New York.

**Electrical Instrument Makers—**

North-Western Electric Gas Lighting  
 Clark st, Chicago, Ills.  
 Novelty Electric Co. 502 Locust st. G.  
 5th st. Philadelphia, Pa.  
 Partrick & Carter, 114 South 2nd st. Phila  
 Pa.  
 Patterson H. T. & Co (Supplies), 138 C  
 New York.  
 Patterson John M. 91 Grant st. Pittsburg  
 Pearce & Jones, 79 John st, New York.  
 Petersen Alma Miss, 155 22nd st. Chicag  
 Pickett Margaret, 415 W. Washn. st. Chic  
 Pinkham C. S. & Co. 432 Walnut st. Phila  
 Pa.  
 PINKHAM & SEAL, 38 Hudson st. F  
 phia, Pa., *see index to advertisers.*  
 Pool A. A. & Co. 55 N. J. R. R. av. Newar  
 Post & Co. Cincinnati, O.  
 Pride, Fraleigh & Kyle, 23 Dey st. New  
 Pulvermacher Galvanic Co. (belts), 167 I  
 Cincinnati, O.  
 Railway Car Elec. Sig. Co. 71 B'way, Ne  
 Rauda Otto, 194 Fulton st. New York.  
 RAYNOR H.M., M. (platinum foil & )  
 Bond st. New York, *see index to adverti*  
 Reitz C. & Snean E. J. Indianapolis, Ind  
 Richardson A. M. & Co. 104 W. 42nd  
 York.  
 Reihl & Hasse, Race, cor. Longworth st. Cin  
 ROUSSEAU D. 4th av. n. 13th st. Ne  
 office 181 B'way, bet. Cortlandt & Dey:  
 York.  
 Royce & Marean 1408 Penn. av. Washing  
 Runkel Henry E. 21 E. 15th st. New Yo  
 Schecffer G. A. Evansville, Ind.  
 SCHOOLEY W. D. Richmond, Ind.  
 Scott C. W. Louisville, Ky.  
 Sharp C. C. Indianapolis, Ind.  
 Shiras J. O. 13 W. 4th st. Cincinnati, O.  
 Smith & Rhodes, Elec. Co. Ld. 37 Barclay  
 York.  
 Smith T. J. 81 3rd st. Brooklyn, E.D. N  
 Smoltz Wm. 420 Montgomery st. San Fr  
 Cal.  
 Snean E. Indianapolis, Ind.  
 Spencer & Crocker, 117 to 121 W.  
 Cincinnati, O.  
 Stammers H. E. 1430 Broadway, New Yo  
 STANDARD ELECTRICAL WORKS  
 Cincinnati, O., *see index to advertisers.*  
 Stearns & George, 29 Pearl St. Boston, M  
 Stendel R. A. 117 Clark st. Chicago, Ills.  
 Stendell Rd. A. 30 & 150 Dearborn st C  
 Ills.  
 Telegraph Supply Co. 71 Ontario st. Cleve  
 Terry W. H. Camden, N.J.  
 Thau Henry, 130 Fulton st. New York.  
 THE CHAS. WILLIAMS JR. BRANC  
 THE WESTERN ELECTRIC CO.  
 115 Court st. Boston, Mass., *see  
 advertisers.*  
 Thomson-Houston Electric Light Co. 3138  
 nut st. Philadelphia, Pa.



## al Instrument Makers—continued.

SON L. G. & CO. 5 & 7 Dey st.; fac-  
39, 141 & 143 Centre st. New York, *see*  
advertisers.

ELECTRIC MANUFACTURING CO.  
1 st. & 145 Broadway, New York, *see*  
advertisers.

e Mrs. S. L. 91 Washington st. Chicago,

poole Electric Light Co. 203-205 Van  
st. Chicago, Ills.

E. W. 195 Broadway, New York.

& Co. 14 Jackson st. Chicago, Ills.

Emil. W. 36 John st. New York.

Ferd. W. 206 Race st. Cincinnati, O.

Bartlett 204 E. 23rd st. New York.

J. O. 88 Lake st. Chicago, Ills.

J. W. jr. 192 W. 5th st. Cincinnati, O.

rm. 109 E. 13th st. New York.

ERN ELECTRIC CO. 220 Kinzie st.

go, Ills. 63 New Church st. New York and  
apolis, Ind., *see index to advertisers.*

E. 238 Washington st. Newark, N.J.

Edward, 23 Plane st. Newark, N.J.

Eldon, 144 La Salle st. Chicago, Ills.

Finck, 769 Market st. San Francisco, Cal.

& Co. 134 Madison st. Chicago, Ills.

er E. 187 Vine st. Cincinnati, O.

## Electrical Schools.

F.—

G.—*Schulen der Electricität.*

a College School of Mines, 47th st. 4th av.  
York (scientific course).

Univ. Ithaca, N.Y. (elec. engineering).

School of Science (scific. course) Prince-  
N.J.

l Univ. (scific. course) Cambridge, Mass.

echntl. Inst. of Elec. Engineering, Boston,

Inst. of Technology, Hoboken, N.J.

n's Business & Telegraphic College, 4th

posite the Cooper Union, New York.

Telegraph Instruction Co. 3 Park row,

York; branch office in Brooklyn, N.Y.

n School of Telegraphy, Janesville, Wis.

ollege (scific. course) New Haven, Conn.

## Electrical Sundries—Manufacturers.

F.—*Appareils divers électriques.*

—*Verfertiger von Electricische Artikeln.*

H ELECTRIC CO. (Parent Co.) 379  
id av. Cleveland, Ohio, *see index to*  
*tisers.*

MAN JAS. F. Inventors' Institute, Cooper  
n, New York, *see index to advertisers.*

y Wm. L. Schaefer, 144 Chambers st. New  
c.

ZER CHARLES W. Brookline, Mass.  
*index to advertisers.*

OLEY W. D. Richmond, Ind.

t Augustus 64 Broadway, Providence, R.I.  
nt cable clip).

## Electrical Supplies.

F.—*Appareils Electriques.*

G.—*Lieferanten in electrischen Artikeln.*

Ahlstrom O. G. 162 William st. New York.

American Electric Co. New Britain, Conn.

Amn. Elec. Mfg. Co. 90 Lake st. Chicago, Ills.

Bahr & Zahn, 108 Liberty st. New York.

Baker J. 333 Washington st. Boston, Mass.

Ball Clinton M. Troy, N.Y.

Bailey Theo. P. 203 Van Buren st. Chicago, Ills.

Banks Wm. H. 203 & 205 Van Buren st. Chi-  
cago, Ills.

BLY CHARLES L. 37 Pearl st. Boston, Mass,  
*see index to advertisers.*

Bonwill Wm. G. A. 1721 Locust st, Philadel-  
phia, Pa.

Boston Electric Protective Association, r. 7,  
56 Summer st. Boston, Mass.

BOSTON ELECTRIC CO. 550 Washington st.  
Boston, Mass., *see index to advertisers.*

Bowen Wm. J. Norwalk, Ohio.

BRUSH ELECTRIC CO. (Parent Co.) 379  
Euclid av. Cleveland, O., *see index to advertisers.*

Bunnell J. H. & Co. 112 Liberty st. New York.

BUTLER HARD RUBBER CO. 33 Mercer st.  
New York, *see index to advertisers.*

COURTENAY & TRULL (*Gelatinized Fibre*),  
15, Dey st. New York, *see index to advertisers.*

CUMMING & BRINKERHOFF, 219 E. 18th  
st. New York, *see index to advertisers.*

Davis & Watts, Baltimore, Md.

Dey C. E. & Co. 312 17th st. Denver, Col.

Dodson Wilson P. Philadelphia, Pa.

Dolbear A. Emerson, Somerville st. Mass.

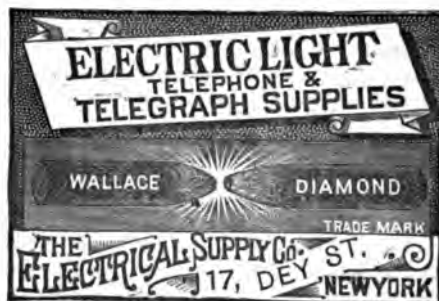
Douglas F. A. over 28 Main st. Loekport. N.Y.

Dreyfus Louis G. 45 West 13th st. New York.

Edison Electric Light Co. 65 5th av. New York.

Ege Alex. H. Mechanicsburg, Pa.

Eldridge J. Morgan, Philadelphia, Pa.



Electric Purifier Co. New Haven, Conn.

Electric Tube Co. 65 Washington st. New York.

ELECTRO-DYNAMIC CO. OF PHILADEL-  
PHIA, 224 Carter st. Philadelphia, Pa., *see*  
*index to advertisers.*

Electro-Graphic Co. 2 Dutch st. New York.

FAIRMAN JAS. F. Inventors' Inst. Cooper U.  
New York, *see index to advertisers.*

Ferrie Odyline Manufacturing Co. 227 Washing-  
ton and 171 Tremont st. Boston, Mass.

FLEISCHMANN A. F. 1226 Chestnut st. Phila-  
delphia, Pa., *see index to advertisers.*

## Electrical Supplies—continued.

Goodrich & Moore, 180 Main st. Buffalo, N.Y.  
 HARBERT EDW. E. & SON, 159 La Salle st.  
 Chicago, Ills.  
 Hasse Robert, Indianapolis, Ind.  
 Hill & Jordan, Columbus, Ga.  
 Hirsh Joseph M. Chicago, Ills.  
 Hubbard Charles W. Boston, Mass.  
 JONES C. E. & BRO. 51 W. 4th st. Cincinnati,  
 O.  
 KINSMAN F. E. & CO. 145 Broadway & 86  
 Liberty st. New York.  
 LECLANCHE BATTERY CO. 145 W. 18th st.  
 New York, *see index to advertisers.*  
 MONTGOMERY & CO. 105 Fulton st. New  
 York, *see index to advertisers.*  
 Mason Volney W. & Co. Providence, R.I.  
 N.Y. Electric Light Association, 23 Dey st. New  
 York.  
 PARTRICK & CARTER, 114 S. 2nd st. Phila-  
 delphia, Pa.  
 Partz August, Philadelphia, Pa.  
 Patterson H. T. & Co. 138 Centre st. New York.  
 Philips William J. 2030 Delaney pl. Philadelphia,  
 Pa.  
 Place George G. 141 Devonshire st. Boston, Mass.  
 Plume & Atwood Manufacturing Co. 13 Federal  
 st. Boston, Mass.  
 Portable Electric Light Co. 79 Water st. Boston,  
 Mass.  
 Post & Co. Cincinnati, O.  
 Rauda Otto, 194 Fulton st. New York.  
 REDDING JEROME & Co. 30 Hanover st.  
 Boston, Mass., *see index to advertisers.*  
 Ritchie E. S. & Sons, 87 Franklin st. Boston,  
 Mass.  
 ROYCE & MAREAN, 1408 Penn. av. Washing-  
 ton, D.C.  
 Rubber Comb & Jewellery Co. 33 Mercer st.  
 New York.  
 SCHOOLEY W. D. Richmond, Ind.  
 Smith T. J. 81 3rd st. Brooklyn E.D. N.Y.  
 Standard Electric Light Co. 211 Centre st. New  
 York.  
 STANDARD ELECTRICAL WORKS, Cincin-  
 nati, O., *see index to advertisers.*  
 THE CHAS. WILLIAMS JR. BRANCH OF  
 THE WESTERN ELECTRIC CO. 109 & 115  
 Court st. Boston, Mass., *see index to advertisers.*  
 TILLOTSON L. G. & CO. 587 Dey st. New  
 York; factory, 139, 111 & 143 Centre st.  
 New York, *see index to advertisers.*  
 UNION ELECTRIC MANUFACTURING CO.  
 7 & 9 Bond st. New York, *see index to advertisers.*  
 U. S. Electric Lighting Co. 120 B'way, New  
 York.  
 WESTERN ELECTRIC CO. Chicago, New  
 York, Indianapolis and Boston, *see index to  
 advertisers.*  
 Weston Electric Light Co. Newark, N.J.  
 White House Mills, Hoosac, N.Y.  
 Wilsonia Magnetic Appliances Co. (S. W. Russell,  
*agent*), 14 Winter st. Boston, Mass.

## Electrical Supplies—continued.

WOLFE L. W. & CO., electricians, and  
 in electric hotel and house annunciator  
 namo - electric machines, electro -  
 engines, medical batteries, electric bell  
 lar alarms, electric gas lighters, &  
 supplies, insulated wire, carbon &  
 battery plates, &c, 206 N. 16th st.  
 blk. Omaha, Neb.

## Electrical Testing Instrument M

*F.—Appareils d'essai électriques.*

*G.—Probirinstrumente für Electricität*

BRUSH ELECTRIC CO. (Parent C  
 Euclid av. Cleveland, O., *see index to ad*  
 ELECTRICAL SUPPLY CO. 17 Dey  
 York and Ansonia, Conn., *see index t*  
*tisers.*  
 FAIRMAN JAMES F. Inventors' I  
 Cooper's Union, New York, *see index t*  
*tisers.*  
 HOLTZER CHAS. W. Brookline, Ma  
*index to advertisers.*  
 WESTERN ELECTRIC CO. New Yor  
 cago, Indianapolis & Boston, *see index*  
*vertisers.*

## Electricians.

*See list of Members New York and London E  
 Societies.*

*F.—Electriciens.*

*G.—Electricitäts-Kundige.*

Abernethy J. P. Supt. Tel. Cleveland, O.  
 Agnew T. J. Philadelphia, Pa.  
 Airey A. L. Cleveland, O.  
 Allen L. M. Duxbury, Mass.  
 Allison Wm. C. Philadelphia, Pa.  
 Amet E. H. La Grange, Ills.  
 Anders G. L. Boston, Mass.  
 Andrews C. N. San Francisco, Cal.  
 Anson E. M. 195 Broadway, New York.  
 Archibald L. B. Supt. Government R  
 Charlottetown, Prince Edward's Island.  
 Arnold J. G. Worcester, Mass.  
 Athern W. E. American Rapid Telegra  
 187 Broadway, New York.  
 Atterbury J. R. Pittsburgh, Pa.  
 Avery Dr. Elroy M. electrician and expert  
 Electric Assn. 404 Market st. St. Louis  
 Bader & Weber, 242 Broome st. New Yo  
 Bain Forcé, 721 Hennepin av. Minneapolis.  
 Baker G. E. 195 Broadway, New York.  
 Baker J. N. electrician & expert Brush I  
 Light Co. Topeka, Kansas.  
 Baldwin A. A. Ionia, Mich.  
 Ball C. E., N. E. cor. 22nd st and 2nd av  
 York.  
 Ball C. M. Troy, N.Y.  
 Ballou G. F. New York.  
 Banta W. E. Springfield, O.

**ians—continued.**

E. T. 49 Broadway, New York.  
 so. F. University pl. Philadelphia, Pa.  
 . L. 107 State st. Boston, Mass.  
 . C. 336 W 56th st. New York.  
 E. S. Pittsburgh, Pa.  
 H. (assist.-gen. manager W. U. Tel.  
 w York) 195 Broadway, New York.  
 G. W. 314 Green av. Brooklyn, N.Y.  
 . Medina, N.Y.  
 I. Newark, N.J.  
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 Menendez J. 1528 Frankford av. Philadelp  
 Menyhart J. G. 1 Desbrosses st. New Yo  
 Mercil B. 226 Kinzie st. Chicago, Ills.  
 Mercel J. 66 New Church st. New York.  
 Meriden Britannia Co. 46 E 14th st. Nev  
 134 Sutter st. San Francisco, Cal. & J  
 Conn.  
 Meriden Silver Plate Co. 30 E 14th st. Ne  
 and Meriden, Conn.  
 Mersfelder L. Newark, N.J.  
 Middletown Plate Co. 13 John st. Nev  
 120 Sutter st. San Francisco, Cal., and  
 town, Conn.  
 Miller H. 225 Elm st. Cincinnati, O.  
 Mills A. A. Pittsfield, Mass.  
 Milwaukee Silver-Plate Co. Milwaukee,  
 Mitchell J. E. 716 Chestnut st. Philadelp  
 Mitchell T. C. Stamford, Conn.  
 Moffett Mrs. E. S. Adrian, Mich.  
 Moore B. F. & Son, 71 Nassau st. New Y  
 Moore & Price, 892 Broad st. Newark, N  
 Moore M. E. 21 John st. New York.  
 Morgan Silver Co. 120 Main st. Cincinna  
 Morgan G. Camden, N.J.  
 Morris J. M. 35 State st. Rochester, N.Y  
 Morrison & Corcoran, 120 Main st. Cincin  
 Morse A. B. Merrimac, Mass.  
 Muldoon H. P. 71 Sudbury st. Boston, M  
 Murphy D. 100 E 12th st. New York.  
 Murphy J. H. Merrimacport, Merrimac,  
 Mutual Silver Pl. Co. 209 N 10th st. St. Lou  
 Nash R. R. 17 Province st. Boston, Mass  
 Nast Greenzweig & Co. 533 Market st. Sa  
 cisco, Cal.  
 Narcisse, Beaudry & Bro. 180 Notre  
 Montreal.  
 Nathan B. & Co. 126 Sutter st. San  
 cisco, Cal.  
 Neef G. B. & Co. 214 Quarry st. Philadelp  
 N. E. Pltg. Co. 372 Atlantic av. Boston.  
 N. Y. Nickel Plating Co. 239 Broadwa  
 York.  
 Newark Nickel Plating Co. Newark, N.J



# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## -Platers—continued.

G. & Co. 30 Exchange st. Worcester, Mass.  
 L. 16 Maiden lane, New York.  
 C. 53 Maiden lane, New York.  
 Lean L. J. B. & Co. 75 Nassau st. New  
 York.  
 Lean R. A. 50 Ann st. New York.  
 L. 48 Centre st. New York.  
 Nickel Co. Norwich, Conn.  
 L. R. 12 Calhoun pl. Chicago, Ills.  
 & Co. 88 John st. New York.  
 L. B. 638 Market st. San Francisco, Cal.  
 J. 120 Exchange st. Philadelphia, Pa.  
 Brockmann, 261 Randolph, Chicago, Ills.  
 G. W. Kalamazoo, Mich.  
 H. Columbus, O.  
 Gold & Silver Plating Wks. Oneida, N.Y.  
 L. 346 6th av. New York.  
 S. & Co. 109 E. 13th st. New York.  
 Mfg. Co. 20 Maiden lane New York &  
 Bedford, Mass.  
 Bachelder & Co. 394 Washington st.  
 Boston, Mass.  
 J. & Jacherri, 8 Golden Gate a. San  
 Francisco, Cal.  
 J. A. 652 Mission st. San Francisco, Cal.  
 Phillippe & Co, Syracuse, N.Y.  
 Rome, N.Y.  
 M. Portland, Me.  
 A. Nashua, N.H.  
 J. New Haven, Conn.  
 F. L. & H. C. Hartford, Conn.  
 Ross & Co. 717 S 6th st. St. Louis, Mo.  
 J. 775 Broadway, New York.  
 C. G. 209 Centre st. New York.  
 Aluminium & Nickel Works Amber and  
 Philadelphia, Pa.  
 Plating Works, Peoria, Ills.  
 K. Collis, 6 Calham pl. Chicago, Ills.  
 K. Miller, 120 Sutter st. San Francisco,  
 Cal.  
 Philadelphia Nickel Plating Wks. 1528 Frankfort  
 Philadelphia, Pa.  
 V. H. & L. E. Hartford, Conn.  
 gh Plate Co. 139 2nd av. Pittsburgh, Pa.  
 A. A. 555 8th av. New York.  
 Mutz, 45 Ann st. New York.  
 J. M. Rutland, Vt.  
 Utica, N.Y.  
 Wm. & Co. 247 W 5th st. Cincinnati, O.  
 & Moreland, Wilmington, Del.  
 Co. 62 Terrace st. Buffalo, N.Y.  
 E. 243-245 Arch st. Philadelphia, Pa.  
 K. Appleton, 304 Washington st. Boston,  
 Mass.  
 K. Hanman, 64-66 S Canal st. Chicago, Ills.  
 W. V. Rahway, N.J.  
 City Nickel Plating Works, 101 W 5th  
 Cincinnati, O.  
 M. 80 State st. Rochester, N.Y.  
 h & Co. 110 Montgomery st. San Fran-  
 cal.  
 E. D. 50 Sudbury st. Boston., Mass.  
 F. Allentown, Pa.

## Electro-Platers—continued.

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 Reddick T. Waltham, Mass.  
 Reed & Barton, 686 Broadway, New York.  
 Regney P. 665 Mission st. San Francisco, Cal.  
 Reid & Bros. Reading, Pa.  
 Reynolds E. H. & Co. 107 Dorrance st. Provi-  
 dence, R.I.  
 Reynolds M. 1375 Broadway, New York.  
 Reynolds J. Peekskill, N.Y.  
 Rhode Island Nickel Plating Works, 28½ Potter  
 st. Providence, R.I.  
 Richards J. L. Springfield, Mass.  
 Richmond & Cherry, 53 Ann st. New York.  
 Riley & Lynch, 17 Mulberry st. Newark, N.J.  
 Ristine C. 114 N 2nd st. Philadelphia, Pa.  
 Robbins J. P. & Co. 3rd cor. Race st. Phila. Pa.  
 Roberts E. M. & Son, Hartford, Conn.  
 Roberts & Havell, 284 Washn. st. Newark, N.J.  
 Robinson J. W. 11 Ann st. New York.  
 Robinson W. L. Worcester, Mass.  
 Rochicioli R. F. 8 Tyler st. San Francisco, Cal.  
 Roehring F. W. 46 or 248 Plymouth st. Brooklyn.  
 N.Y.  
 Rogers & Brittin Silver Co. Bridgeport, Conn.  
 Rogers & Brother, 690 Broadway, New York.  
 Rogers & Co. 62 Canal st. Boston, Mass.  
 Rogers Cutlery Co. Hartford, Conn.  
 Rogers, Smith & Co. Meriden, Conn.  
 Rogers & Spurr Mfg. Co. Greenfield, Mass.  
 Rogers Wm. Mfg. Co. Hartford, Conn.  
 Rogers R. M. Union City, Pa.  
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 Rose E. F. Dighton, Mass.  
 Rubenstein Bros. 537 Craig st. Montreal.  
 Rudeger A. & Co. 26 & 261 Randolphst. Chicago, Ill.  
 Rudgear & Parr, 23 Stevenson st. San Fran-  
 cisco, Cal.  
 Russell A. Wilton, Me.  
 Russell S. H. 8 Province st. Boston, Mass.  
 St. Louis Nickel Pltg. Wks. 115 Morgan st. St.  
 Louis, Mo.  
 Sample W. H. Albany, N.Y.  
 Sargeant Mfg. Co. 79 Summit st. Newark, N.J.  
 Sargent Fred. H. New Bedford, Mass.  
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 Sawkins F. A. 54½ W Fayette st. Baltimore, Md.  
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 Schaezlin R. 13 Trinity st. San Francisco, Cal.  
 Schandain J. W. 114 S 2nd st. Philadelphia, Pa.  
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 Schenck C. & Co. Ansonia, Conn.  
 Schild J. S. Fort Wayne, Ind.  
 Schnuck & Co. Derby, Conn.  
 Schoonmaker D. 49 Taylor st. Springfield, Mass.  
 Schulze L. & Son 104 N 6th st. Philadelphia, Pa.  
 Scott & Ward, Indianapolis, Ind.  
 Seaman W. H. Greenfield, Mass.  
 Searl J. 25 N 13th st. Philadelphia, Pa.  
 Sheffield Cutlery Concern, State cor. Washing-  
 ton st. Boston, Mass.

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 Shreeve G. C. & Co. 110 Montgomery st. San Francisco, Cal.  
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 Smith & Walker, Concord, N.H.  
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 Smith G. B. 609 N 7th st. St. Louis, Mo.  
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 Smith J. R. Waltham, Mass.  
 Snow A. W. & Co. Indianapolis, Ind.  
 Snyder F. H. 911 Vine st. Philadelphia, Pa.  
 Spink S. P. & Sons, 7 4th st. San Francisco, Cal.  
 Standard Silver Ware Co. 17 Battery-march st. Boston, Mass.  
 Stanley & Son, Troy, N.Y.  
 Starr W. L. & Co. 44 Lawrence st. Newark, N.J.  
 Steadman W. H. North Adams, Mass.  
 Steane, Son & Hall, 36 Gold st. New York.  
 Stecher & Baumgarten, 460 Dillwyn st. Phil. Pa.  
 Stephenson G. W. 210 Grand st. New York.  
 Stewart & Jones, 54 N 6th st. Philadelphia, Pa.  
 Stockwell C. H. 11 S 9th st. Philadelphia, Pa.  
 Stolpe E. 609 7th st. Washington, D.C.  
 Straus, Kohnstamm & Co. Battery cor. Pine st. San Francisco, Cal.  
 Streeter James, 8 E Main st. Rochester, N.Y.  
 Strickland R. & Co. Albany, N.Y.  
 Strong Manufacturing Co. Winstead, Conn.  
 Stuart & Banker, Bangor, Me.  
 Sturdy G. H. & Co. 209 Pine st. Prov. R.I.  
 Sturdy J. E. 190 Eddy st. Providence, R.I.  
 Sutterly Jones & Stewart, Limited, 54 N 6th st. Philadelphia, Pa.  
 Taunton Nickel Pltg. Co. (N.D.) Dighton, Mass. and Taunton, Mass.  
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 Tierney John, Portland, Me.  
 Tillman J. & Hausgen E. 213 Grand st. New York.  
 Tilmay J. Portland, Me.  
 Titcomb A. C. & Co. 24 Post st. San Francisco, Cal.  
 Titus & Walker, Amesbury, Mass.  
 Tonkin Wm. 629 Filbert st. Philadelphia, Pa.  
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 Tweed Henry R. 382 2nd av. New York.  
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 Union Pltg. Wks. 259 Randolph st. Chicago, Ills.  
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 Van Volkenburg D. Utica, N.Y.  
 Vennerbeck & Chase, 107 Friendship st. Pr R.I.  
 Wadsworth E. M. & Co. St. Louis, Mo.  
 Waldron J. V. & Bro. 40 Sudbury st. Mass.  
 Walker F. P. r. 627 Arch st. Philadelphia  
 Walker J. 40 Franklin st. Newark, N.J.  
 Walker Wm. 64 Fulton st. New York.  
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 Warner William A. Syracuse, N.Y.  
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 Warren E. Bridgeport, Conn.  
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 Welley & Hotchkiss, 47 Ann st. New Y.  
 Welling C. G. 88 John st. New York.  
 Wenzel Adolph C. 114 Centre st. New Y  
 West Haven Plating Co. Orange, Conn.  
 West Mal. Nickel Co. 45 William st. New  
 Westfield Plating Co. Westfield, Mass.  
 White Water Silver Plating. Co. Conn Ind.  
 Whitehand R. A. 804 D st. Washington  
 Wight A. M. Augusta, Me.  
 Wilcox Silver Plate Co. 6 Maiden la. Ne and Meriden, Conn.  
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 Wilkenson, F. R. 49 Maiden la. New Yo  
 Williams Bros. Mfg. Co. (Naubuc) Glas Conn.  
 Winsted Silver Plate Co. (Wt. W.) Winsted  
 Withers G. B. 14 James st. St. Louis, M  
 Wolferty, Fred. H. 95 Elizabeth st. New  
 Worcester Plating Co. Worcester, Mass.  
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 Wright W. H. Erie, Pa.  
 Wuterich F. J. cor. White & Elm sts. Ne  
 Yale C. B. & G. S. 36 E. 14th st. New Y  
 Yates & Ely, 136 st. & 3rd av. New York  
 Yocum T. 602 Cherry st. Philadelphia, I  
 Young & Dimworth, 301 E. 22nd st. New  
 Young M. & Co. 131 Dorrance st. Providence  
 Young D. R. 208 N. 10th st. Philadelphia  
 Zante D. 190 Jessie st. San Francisco, C  
 Zettner & Wright, St. Joseph, Mo.  
 Zucker & Levett Chemical Co. 540, 542, 546 W. 16th st. New York.

**Electroliter Manufacturers.**

*F.—Electroliters (Fab. d.).*

*G.—Candleluer für Electrische Lamp*

Almy H. S. & Co. 42 Park pl. New York  
 Automatic Gas Lamp & Ltg. Co. 59 C New York.  
 Becker Henry, 190 Orchard st. New York

## er Manufacturers—continued.

n Siegmund, 86 Fulton st. New York.  
 NN & CO. 292 to 298 av. B.  
 rk, *see index to advertisers.*  
 Barnett, 40 Murray st. New York.  
 Ebenezer, 93 Maiden la. New York.  
 mile V. 109 Wooster st. New York.  
 : Lacy, 52 Park pl. New York.  
 Hubbard Mfg. Co. 21 Barclay st. & 26  
 New York, & Meriden, Conn.  
 as & Clock Co. 32 Warren st. New  
 Forrestville, Conn.  
 o. W. 32 Warren st. New York.  
 . & Sons, 151 Chambers st. New York.  
 h C. 60 Duane st. New York.  
 lenrietta, 40 Ludlow st. New York.  
 ish & Unger, 28 College pl. New York.  
 ilson, 38 Park pl. New York.  
 rles H. 1150 Broadway, New York.  
 & Elwell Mfg. Co. 33 Barclay st.  
 rk.  
 as. 122 E. 14th & r 122 E. 11th st.  
 rk.  
 le J. 136 E. 13th & 37 E. 18th st.  
 rk.  
 Wellington Mfg. Co. 496 Cherry st.  
 rk.  
 . F. & Co. 822 Broadway, New York.  
 d. & Co. 44 Park pl. New York.  
 S. & Co. 20 College pl. New York.  
 & Co. 36 Barclay st. New York.  
 ; Solomon, 323 E. Houston st. New  
 erre E. 24 W. 3rd st. New York.  
 es B. 44 Murray st. New York.  
 Rhind, 137 Elm st. New York.  
 lectric Light Co. St. Louis, Mo.  
 smith, 42 S. 5th av. New York.  
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 ry, 279 av. B. New York.  
 : Lamp Co. 59 Murray st. New York.  
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 rainard, 224 6th av. New York.  
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 Marke, 167 Division st. New York.  
 nn August, 162 Mott st. New York.  
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 e David H. 80 3rd av. New York.  
 n Brass Co. 475 1st av. New York.  
 Edward R. & Co. 26 Cortlandt st.  
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 l. 11 Murray st. New York.  
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 y st. New York.  
 lward & Co. 35 Warren st. New York.  
 cob G. 823 Eagle av. New York.  
 ELL, VANCE & CO. 836 & 838 Broad-  
 ew York, *see index to advertisers.*

## Electrolier Manufacturers—continued.

Murphy William T. 96 John st. New York.  
 Overback Franklin, 33 Murray st. New York.  
 Pabst & Arming, 21 Murray st. New York.  
 Pettet William, 60 Warren st. New York.  
 Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
 New York.  
 Raymond C. S. & Co. 266 Greenwich st.  
 New York.  
 Reilly Solomon S. 400 and 469 Canal st.  
 New York.  
 Reilly Thomas, 829 1st av. New York.  
 Robins Wm. B. 61 Ann st. New York.  
 Rogers L. W. 15 Cornhill, Boston, Mass.  
 Rorke Edward & Co. 40 Barclay st. New York.  
 Rumpellen Herman, 256 2nd av. New York.  
 Russell Henry & Co. 42 Barclay st. New York.  
 Ryan, May & Latus, 38 Bleecker st. New York.  
 Schneider Bennett B. 35 Park pl. New York.  
 Smith Josephine D. 352 Pearl st. New York.  
 Stammer William, 153 Greenwich st., New York.  
 Traub John, 209 7th st. New York.  
 Vandewerken Eldridge, 50 Barclay st. New  
 York.  
 Warwick Saml. D. 207 Centre st. New York.  
 Weddle & Magee, 33 Murray st. New York.  
 Weiss Marcus, 301 W. 42nd st. New York.  
 Wright James T. 225 Greenwich st. New York.

## Electro Plating and Depositing Machine Manufacturers.

F.—

G.—*Maschinen zum Versilberung.*

BRUSH ELECTRIC CO. (Parent Co.) 379  
 Euclid av. Cleveland, O. *see index to advertisers.*

## Electrotypers.

F.—*Electrotypie.*

G.—*Galvaniseure.*

Abbott & Co. 12 Barclay st. New York.  
 Allison & Smith, 168 Vine st. Cincinnati, O.  
 American Type Founders, 510 Clay st. Phila. Pa.  
 Blade Ptg. & Paper Co. Toledo, O.  
 Blany C. W. jr. 8 N. Anderson st. Boston, Mass.  
 Blomgren Bros. & Co. 164 Clark st. Chicago, Ills.  
 Boston Elec. Co. 22 Pearl st. Boston, Mass.  
 Boston Type Foundry, 104 Milk st. Boston, Mass.  
 Brinkerhoff John P. 166 Greenwich st. New  
 York.  
 Brownell E. Lafayette, Ind.  
 California Electrotype Works, 134 Sutter st.  
 San Francisco, Cal.  
 California Type Foundry, 511 Sansom st. San  
 Francisco, Cal.  
 Campbell & Co. 174 Elm st. Cincinnati, O.  
 Chandler H. 13 E. Swan st. Buffalo, N.Y.  
 Cincinnati Type Foundry, 201 Vine st. Cin. O.  
 Claremont Manufacturing Co. Claremont, N.H.  
 Clark J. S. Troy, N.Y.  
 Cleveland Electrotype Foundry, 55 Frankfort st.  
 Cleveland, O.

## Electrotypers—continued.

Crane Michael, 21 College pl. New York.  
 Craske Chas. 21 Rose st. New York.  
 Denyse Wm. & Sons, 13 Frankfort st. New York.  
 Dill G. H. 222 Gold st. Philadelphia, Pa.  
 Dill Vincent, 27 New Chambers st. New York.  
 Diver F. & Co. 14 King st. East, Toronto.  
 Dominion Type Founding Co. 13 and 17 Chenniville st. Montreal.  
 Donhet A. E. 2 S. Walter st. Cleveland, O.  
 Dusenbury B. M. 322 Harmony st. Philadelphia, Pa.  
 Eichleum J. & Co. 48 5th av. Pittsburgh, Pa.  
 Elm St. Pltg. Co. 176 Elm st. Cincinnati, O.  
 Fagan J. & Son, 621 Commerce st. Phila. Pa.  
 Felt Joseph P. & Co. 25 Rose st. New York.  
 Ferguson Bros. & Co. 15 N. 7th st. Philadelphia, Pa.  
 Fleming & Son, Toronto, Canada West.  
 Francis Valentine & Co. 517 Clay st. Phila. Pa.  
 Franklin Type Foundry, 168 Vine st. Cin. O.  
 Harrison & Whitlock, 110½ W. Batlo st. Baltimore, Md.  
 Heymer J. C. & Co. 21 Province st. Boston, Mass.  
 Hobbs R. H. Hartford, Conn.  
 Hoe R. & Co. 504 Grand st. New York.  
 Hollingshead James H. 118 William st. New York.  
 Hurst Charles, 113 Nassau st. New York.  
 Huttie Spencer & Co. 83 Jackson st. Chicago, Ills.  
 Iowa State Register, Des Moines, Iowa.  
 Jamison Bros. 92 Diamond st. Pittsburgh, Pa.  
 Johnston Wm. G. & Co. 231 Liberty st. Pittsburgh, Pa.  
 Ketchum & Wanamaker, Indianapolis, Ind.  
 Lennox J. C. Rochester, N.Y.  
 Lent C. De Wett 30 Park pl. New York.  
 Little J. J. & Co. 10 Astor pl. New York.  
 Lohouse A. F. 14 E. Swan st. Buffalo, N.Y.  
 Lovejoy, Son & Co. 17 Vandewater st. New York.  
 Lyman N. & Sons, 36 W. Seneca st. Buffalo, N.Y.  
 McCay G. & Co. 203 Vine st. Cincinnati, O.  
 Marden Luse & Co. 139 Munroe st. Chicago, Ills.  
 Marshall & Allen, Indianapolis, Ind.  
 Mengil J. C. jr. St. Paul & Bank sts. New York.  
 Miller & Richard, 529 Commercial st. Philadelphia, Pa.  
 Mills & Co. Des Moines, Iowa.  
 Morrison A. & Son, 597 Craig st. Montreal.  
 Munsord & Hanson, 704 Sansom st. Philadelphia, Pa.  
 Nell G. W. 253 S. 12th st. Philadelphia, Pa.  
 N. E. Type Foundry Co. 243 Washington st. Boston, Mass.  
 Niven & Muir, Rochester, N. Y.  
 Northrup W. P. & Co. 13 E. Swan st. Buffalo, N.Y.  
 Onink C. J. 193 Main st. Buffalo, N.Y.  
 Pendersand & Crisand, New Haven, Conn.  
 Peters C. J. & Son, 73 Federal st. Boston, Mass.  
 Photo. Electrotpe Co. (Daniel Cherry & Co.) 13 & 15 Park row, New York.  
 Pugh A. H. 126 Walnut st. Cincinnati, O.  
 Raisbeck Electrotpe Co. 68 Beekman st. New York.

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 Ringler T. A. & Co. 22 and 23 Barclay 26 and 28 Park place, New York.  
 Rounds S. P. 175 Munroe st. Chicago, I  
 Rowell R. Louisville, Ky.  
 Ryan J. & Co. South & German sts. B Md.  
 San Francisco Type Foundry, 512 Clay Francisco, Cal.  
 Schulze H. M. 98 Paydras st. New Ork  
 Sheldon E. B. & Co. New Haven, Conn.  
 Slattery R. F. 61 Camp st. New Orleans  
 Smith & McDougal, 82 Beekman st. Ne  
 Stodder Samuel, 90 Ann st. New York.  
 Stone J. Cambridge Port, Mass.  
 Taylor Joel W. 15 Vandewater st. New  
 Union Electrotpe Foundry, 76 Fran Cleveland, O.  
 Warren J. D. 253 Washington st. Buffa  
 Weed, Parsons & Co. 41 Columbia st. Alba  
 Western Electrotpe Foundry, 207 Che St. Louis, Mo.  
 Western Newspaper Union, Des Moines,  
 Westcott & Thomson, 710 Filbert st. I phia, Pa.  
 Whitcomb H. C. & Co. 22 Milk st. Bost  
 Winterburn J. & Co. 417 Clay st. San F Cal.  
 Wiseman James L. 49 John st. Montreal  
 Wood R. Troy, N.Y.  
 Zeese A. & Co. 157 Dearborn st. Chicag

## Electrotypers' Supplies.

F.—

G.—

JOSEPH DIXON CRUCIBLE CO.  
 City, N.J. and 68 Reade st. New York

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F.—*Médailles.*

G.—*Münzen.*



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*—Ingenieure—Electrische Beleuchtung.*

Prof. E. M. c/o Brush Electric Association,  
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x. Graham, 95 Milk st. Boston, Mass.

ELECTRIC CO. (Parent Co.) 379

1 av. Cleveland, O. *see index to advertisers.*

l. A. 65 5th av. New York.

Walter K. 147 Fulton st. New York.

W. 9 Bond st. & 145 B'way, New York.

J. K. & Co. 1671 B'way, New York.

WOOD THOMAS D. 95 Milk st. Boston,

Hiram, 59 Liberty st. New York.

raleigh & Kyle, 23 & 25 Dey st. New York.

**Engineers—Electrical.**

*F.—Ingénieurs—Electriciens*

*G.—Ingenieure der Electricität.*

W. S. 65 5th av. New York.

theo. P. 203 & 205 Van Buren st. Chicago,

ELECTRIC CO. (Parent Co.) 379

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ic Light Co. 65 5th av. New York.

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r st. Providence, R.I.

NG GEORGE, 219 East 18th st. New

W. L. K. 65 5th av. New York.

A. 31 Milk st. Boston, Mass.

L. 65 5th av. New York.

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s Union, New York, *see index to advertisers.*

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HMANN A. F. 1226 Chestnut st.

elphia, Pa. *see index to advertisers.*

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t. G. 65 5th av. New York.

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Marrence L. 120 Broadway, New York.

E. & Bro. 51 W. 4th st. Cincinnati, O.

W. 9 Bond st. & 145 B'way, New York.

r James H. 95 Liberty st. New York.

H. Ward, 65 5th av. New York.

WOOD THOMAS D. 95 Milk st. Bos-  
ton, Mass.

H. J. 62 Artillery st. Quebec, Canada.

Hiram, 120 Broadway, New York.

Alfred M. Professor Stevens Institute of  
ology, Hoboken, N.J.

Professor Henry Stevens Institute of  
ology, Hoboken, N.J.

raleigh & Kyle, 23 & 25 Dey st. New York.

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 dence, R.I.  
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N.Y.  
mas, cor. Franklin and Centre sts.  
k.  
eph R. 38 Park pl. New York.  
33 Deimoures pl. Brooklyn, N.Y.  
Works, cor. Delevan and Van Brunt  
dyn, N.Y.  
3, 81 Murray st. New York.

## Glass Manufacturers—continued.

Lebel E. 54 Barclay st. New York.  
Lindsley & Pike, 26 Warren st. New York.  
Lonsdat A. M. cor. Wallabout st. Brooklyn, N.Y.  
Lucas A. H. 79 Adams st. Brooklyn, N.Y.  
Lunn Wm. H. 46 Murray st. New York.  
Mayer C. 182 N. 8th st. Brooklyn, N.Y.  
McElroy Patrick J. East Cambridge, Mass.  
McFadden & Hatton, 35 W. 4th st. New York.  
Meriden Flint Glass Co. 147 Franklin st.  
Boston, Mass.  
Mobile Glass Co. 501 N. 3rd st. St. Louis, Mo.  
Mount Washington Glass Co. A H. Seabury,  
Treasurer, New Bedford, Mass.  
Nail City Glass Co. Wheeling, W. Va.  
Page Harding & Co. Berkshire, East Cambridge,  
Mass.  
Plowman Robt. G. 61 Park pl. New York.  
Raney Henry C. 58 Barclay st. New York.  
Riemann Herman, 88 Maiden Lane, New York.  
Ryan W. F. 291 Front st. Brooklyn, N.Y.  
Schroeder Chas. 16 Bond st. New York.  
Semmer Phillip, 51 Chambers st. New York.  
Siemens Glass Co. 39 Broadway, New York.  
Staniford J. W. 23 Elm st. Boston, Mass.  
Stutta Conrad C. 54 Barclay st. New York.  
Suffolk Glass Co. Lowland S. B. Lorenzo  
Hodsdon, Agent, 113 Milk st. Boston, Mass.  
Union Glass Co. J. P. Gregory Treasurer and  
Agent, 129 Milk st. Boston, Mass.  
Weddle & Magee, 33 Murray st. New York.

## Glass Shade Makers and Dealers.

*F.—Abats-jour en verre (Fab. de).*

*G.—Glauglocken-Fabrikanten.*

Barstaedt Albert A. 12 Rennick st. New York.  
Bowie S. R. & Co. 11 Murray st. New York.  
Cutter Frank L. 7 Murray st. New York.  
Day William, 47 Vesey st. New York.  
Katz Isaac, 535 E. 11th st. New York.  
Pardessus Semon J. 9 Park pl. New York.  
Quarre V. Co. 11 Murray st. New York.  
Wallace Edward E. 1416 Ridge av. and 1419  
Fairmount av. Philadelphia, Pa.  
Wapler Brothers & Co. 22 Warren st. New York.  
Weber Phillip, 50 Barclay and 45 Ann sts.  
New York.  
Wiggers Eva, 180 E. Houston st. New York.  
Wilson James, 508 6th st. New York.

## Graphite Manufacturers.

*F.—*

*G.—*

JOSEPH DIXON CRUCIBLE CO. 229 R. R.  
av. Jersey City, N.J. and 68 Reade st. New  
York.

## Grease Merchants.

*F.—*

*G.—*

JOSEPH DIXON CRUCIBLE CO. 229 R. R.  
av. Jersey City, N.J. and 68 Reade st. New  
York.

**Gutta Percha Covered Wire  
Manufacturers.**

*F.—*

*G.—*

TAYLOR GEO CROSLAND, Dee Side Electric Works, Neston, Cheshire, England, *see index to British advertisers.*

**India Rubber and Gutta Percha Brokers,  
Manufacturers, and Dealers.**

*F.—Caoutchouc (Fab. et Marchands de.)*

*G.—Indiarubber-Händler.*

Abecasis J. S. & Co. 41 Beaver st. New York & 140 Congress st. Boston, Mass.

Atlantic Rubber Co. 21 Park pl. nr. Broadway, New York.

BISHOP GUTTA PERCHA WORKS, 420, 422, 424 and 426 E. 25th st. New York. (W. W. Marks, supt.) *see index to advertisers.*

Boston Car Spring Co. 11 Federal st. Boston, Mass.

Boston Elastic Fabric Co. 173 & 175 Devonshire st. Boston, Mass.

Boston Rubber Co. 35 Arch st. Boston, Mass.

Dodge George. 22 Platt st. New York.

Hodgkiss Geo. 66 Boerum st. Brooklyn, N.Y.

Kenton Chas. 229 Broadway, New York.

McNider James, 138 Water st, New York.

Soltan Robt. 73 Franklin st. New York.

**Insulator (Electrical) Manufacturers.**

*F.—Isoloirs (Fab. d').*

*G.—Isolatoren-Fabrikanten.*

Brooks David, 22 S. 21st st. Philadelphia, Pa.

Chicago (The) Insulating Co. Office, 122 La Salle st.; Manufacturing, 104 and 136 Franklin st. Chicago, Ills.

COURTENAY & TRULL (Gelatinized Fibre), 15 Dey st. New York, *see index to advertisers.*

Union Porcelain Works, 300 Eckford st. Greenpoint, Brooklyn, N.Y.

**Inventors—Electrical.**

*F.—Inventeurs-électriques.*

*G.—Bureau zur Ausnützung von Erfin. Lungen.*

EINBIGLER RUDOLF, New York.

KEITH N. S. 237 Broadway, New York.

KINSMAN F. E. & CO., 145 Broadway and 86 Liberty st. New York.

LAKE, S. D. r. 32, 55 Broadway, New York.

PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*

Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.

**Iridium Manufacturers.**

*F.—Iridium (Fab. d').*

*G.—Iridium-Fabrikanten.*

IRIDIUM COMPANY, s.e. and Plum sts. Cincinnati, O.

**Iron Merchants.**

*F.—*

*G.—*

Border & Lovell, 71 West st. Fall River Works, New York.

Carmichael & Emmens, 130 Cedar st. New

Crocker Brothers, 32 Cliff st. New York.

Hubbard Chas. 46 Cliff st. New York.

Lee James & Co. 72 Pine st. New York.

MONTGOMERY & CO. 105 Fulton York, *see index to advertisers.*

Williamson & Co. 63 Wall st. New York

**Iron Pipe Manufacturers.**

*F.—*

*G.—*

Benton Faulkner & Bird, 35 Dey st. New

Blackalee E. G. & Co. 80 Centre st. New

Bonner & Vancourt, 242 Canal st. & 517 st. New York.

Campbell Felix, 79 John st. New York.

Chelmsford Foundry Co. 131 Portland Boston, Mass.

Chester Pipe & Tube Co. Chester, Pa.

Cincinnati and Newport Iron and P Newport, Ky.

Hondlette F. A. & Co. 19 Batterym Boston, Mass.

Hoover J. & Son, Norristown, Pa.

Langford J. T. 40 Mason bldgs, Boston.

Long D. & Co. Louisville, Ky.

Loughry Wm. P. 16 Cliff st. New York.

Rimble Wm. 126 Broadway, New York.

**Lathe Makers for Electricians**

*F.—Tours pour Electriciens (Fab. de*

*G.—Drehbanken für Elektriker.*

Ames Manufacturing Co. Chicopee, Mass

Avery J. W. Phoenix, Warwick, R.I.

Beggs James & Co. 9 Dey st. New York.

Bowker & Tripp, North Water st. cor. New Bedford, Mass.

Brown Ephraim, Lowell, Mass.

Clemens Foundry & Machine Co. Derby,

Cowdray C. H. Fitchburg, Mass.

Fifield G. W. 22 to 28 Fletcher st. Lowe

Fraser & Co. 62 Chatham st. New York.

Goodspeed & Wyman, Winchendon, Mas

Harrington Edwin & Son, N. 15th st. av. Philadelphia, Pa.

Hill, Clarke & Co. 800 N. 2nd st. St. Lo

Holt N. W. Bennington, Vt.

Huse Warren D. Laconia, N.H.

Johnson Isreal H. junr. & Co. 1423 a Callowhill st. Philadelphia, Pa.

Jones & Lamson Machine Co. Windsor,

Kay Henry E. Fall River, Mass.

Little Charles E. 59 Fulton st. New Yor

Lovell F. S. Chicopee, Mass.



**ers for Electricians—continued.**

& Co. 284 & 285 S. st. New York.  
 ERY & CO. 105 Fulton st. New  
*index to advertisers.*  
 & Co. 212 to 218 Passaic av. East  
 J.

Co. 597 Washington st. Boston,

s. Junction Shop, Worcester, Mass.  
 h. Co. Putnam, Conn.  
 chine Co. Fitchburg, Mass.  
 nus, Fitchburg, Mass.  
 Waltham, Mass.  
 linder, Saw & Machine Co. Taunton.

. Co. 45 Charleston st. Boston, Mass.  
 hine Co. Claremont, N.H.  
 tch Tool Co. Waltham, Mass.  
 D. & Co. Fitchburg, Mass.  
 & Co. 23 Hermon st. Worcester,

. W. Fitchburg, Mass.  
 Fletcher st. c. Rock st. Lowell, Mass.  
 & Co. 19 Church st. Worcester,

**ricant Manufacturers.**

IXON CRUCIBLE CO. 229 R. R.  
 City, N.J. and 68 Reade st. New

**ne Screw Manufacturers.**

*F.—Vis (Fab. de).*

*F.—Sedrauben-Fabriken.*

ERY & Co. 105 Fulton st. New  
*index to advertisers.*  
 , A. C. 35 Canal st. Waterbury,  
*index to advertisers.*  
 204 Broadway, Lowell, Mass.  
 Springfield, Mass.

**ne Tool Manufacturers.**

ERY & CO. 105 Fulton st, New  
*index to advertisers.*

**agnet Manufacturers.**

*F.—Aimants (Fab. d').*

*F.—Magnete-Verfertiger.*

ANN A. F. 1226 Chestnut st.  
 ia, Pa. *see index to advertisers.*  
 F. 200 & 202 N. 3rd st. Philadelphia,  
*index to advertisers.*  
 South West Corner, Pearl & Elm  
 iati, O.  
 L. G. & CO. 5 and 7 Dey st ;  
 39, 141 & 143 Centre st, New York,  
*advertisers.*

**Magnetic Curative Appliance  
 Manufacturers.**

*F.—*

*G.—*

BERGE J. & H. 95 Fulton and 191 Greenwich  
 sts. New York.  
 Berwin G. H. 457 Fulton st. Brooklyn, N.Y.  
 Cotter H. 44 4th st. Brooklyn, E. D. N.Y.  
 Hendrick Dr. 467 5th av. New York, above  
 40th st.

**Manganese Merchants.**

*F.—Marchands—Manganeses.*

*G.—Braunstein-Händler.*

Adams, Wellington M. D. 2210 Wabash av. Chicago,  
 Ills.  
 Backus John, 446 Cherry st. New York.  
 LAMSON J. S. & BRO. 77 Maiden la. New York.  
*see index to advertisers.*  
 Pyrolusite Manganese Co. 54 Cliff st. New York.  
 Woodward C. H. 54 Cliff st. New York.

**Manifold and Carbonic Papers.**

*F.—*

*G.—*

FRANKS, ROBINSON & CO. The "Victor"  
 celebrated Brand ; GEO. CUMMING, Agent,  
 219 E. 18th st. New York, *see index to British  
 advertisers.*

FRANCIS & LOUTREL. 45 Maiden lane,  
 New York.

**Metal Dealers.**

*F.—Métaux (Marchands de).*

*G.—Metall-Händler.*

ANSONIA BRASS & COPER CO. 19 & 21  
 Cliff st. New York, *see index to advertisers.*  
 Crocker Bros. 32 Cliff & 232 S. sts. New York.  
 Carolan, Cory & Co. 119 California st. San F'risco.  
 Cal.  
 DODGE S. C. Lowell, Mass.  
 Dunham, Carrigan & Co. 107 to 111 Front st.  
 San Francisco, Cal.  
 HOLMES, BOOTH & HAYDENS, New York,  
 Boston, Mass. Philadelphia, Pa. Waterbury,  
 Conn. & London, England.  
 Holmes & Weissel Metal Co. 529 W. 24th st.  
 New York.  
 Merchant & Co. Cliff st. c. Beekman st. New  
 York & 525 Arch st. & 520 Cherry st. Phila-  
 delphia, Pa.  
 Moffett Jas. G. 119 Prince st. New York.  
 Montague W. W. & Co. 118 Battery st. San Fran-  
 cisco, Cal.  
 MONTGOMERY & CO. 105 Fulton st. New  
 York, *see index to advertisers.*  
 N. Y. Smelting & Refining Co. 509 West st. New  
 York.  
 Revere Copper Co. 242 South st. New York.

**Merchants—Mica.**

*F.—Marchands—Mica.*  
*G.—Glimmer-Händler.*

American Mica Mining Co. Worcester, Mass.  
Baystate Mining Co., 142 Kneeland st, Boston, Mass.

**Merchants—Zinc.**

*F.—Marchants—Zinc.*  
*G.—Zink-Händler.*

PALMER WIRE CO. PALMER, MASS. *see index to advertisers.*

**Model Makers.**

*F.—Modèles (Fab. de).*  
*G.—Modelle—Fabr.*

Berry Wm. B. & Co. 79 North st. Boston, Mass.  
Burrows William, 85 Beekman st. New York.  
Colby J. D. Rock st. Lowell, Mass.  
Emery P. P. & Co. Hampden st. Springfield, Mass.  
Jolly J. & W. Holyoke, Mass.  
JONES C. E. & BRO. 51 W. 4th st. Cincinnati, Ohio.  
JOST EDMUND, 320 Market st. Newark, N. J.  
Longstreet J. H. 9 Barclay st. New York.  
PARTRICK & CARTER, 114 S. 2nd st. Philadelphia, Pa.  
PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*  
Post & Co. c. Elm & Pearl sts. Cincinnati, O.  
Rogers W. H. Fulton st. New York.  
Roney J. Byron, 114 Munroe st. Lynn, Mass.  
SCHOOLEY W. D. Richmond, Indiana  
TILLOTSON L. G. & Co. 5 & 7 Dey st. New York, *see index to advertisers.*  
Union Electric Mfg. Co. 9 Bond st. New York.  
WESTERN ELECTRIC CO. Chicago & Indianapolis, *see index to advertisers.*

**Patent Solicitors.**

*F.—Agents de Brevets.*  
*G.—Agenten für Patente.*

Adams J. H. 33 School st. Boston, Mass.  
Adcock, 69 Honore bldg. Chicago, Ills.  
Adrians J. H. 931 F. st. Washington, D.C.  
Allen D. C. 511 F st, Washington, D.C.  
Allen W. 632 F st. Washington, D.C.  
Alexander C. M. 709 G st. Washington, D.C.  
Alexander T. A. 607 7th st. Washington, D.C.  
Almquist August W., 150 Nassau st. New York.  
Anderson E. W. & Co. 700 7th st. Washington, D.C.  
Andren A. 61 State st. Boston, Mass.  
Arnold J. (Jr.) Worcester, Mass.  
Babcock W. H. 513 7th st. Washington, D.C.  
Bagger L. & Co. 802 F st. Washington, D.C.  
Bakewell & Kerr, 57 Grant st. Pittsburgh, Pa.  
Baldwin, Hopkins & Peyton, 25 Grant place, Washington, D.C.  
Balliet A. H. Hoboken, N.J.

**Patent Solicitors—continued.**

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Barritt Franklin, 4 College pl. New York  
Barton, G. P. 18 Borden bldg. Chicago,  
Bates W. 27½ W. 3rd st. Cincinnati, O.  
Beadle H. W. & Co. 437 7th st. Washing  
Bell J. S. 913 Walnut st. Philadelphia,  
Bennem William L. 19 Park pl. New York  
Beringer W. C. & Co. 106 4th av. Pittsb  
Bliss H. H. 715 H. st. N. W. Washing  
Bond O. W. 204 Dearborn st. Chicago,  
Boutwell F. M. 54 Equitable bldg. Boston  
Bowen Francis C. 23 Park row, New York  
Bradford C. 16 and 18 Hubbard blk. apolis, Ind.  
Brashier & Williams, Baltimore, Md.  
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Briesen & Betts, 229 Broadway, New York  
Briggs Herbert G. Portland, Me.  
Brookes W. Colborne, 19 Park pl. New York  
Brown Bros. 28 School st. Boston, Mass.  
Brown & Brown (late Brown & Allen, 2 way, New York.  
Brown E. 311 Walnut st. Philadelphia.  
Brown J. S. 810 F st. Washington, D.C.  
Buckley Geo. 903 Walnut st. Philadelphia  
Buckley H. V. 903 Chestnut st. Philadelphia  
Bunnell J. S. Carbondale, Pa.  
Burdett C. L. Hartford, Conn.  
BURKE, FRAZER & CONNETT, 101 New York.  
Burleigh C. H. Worcester, Mass.  
Burridge & Co. Superior st. Cleveland,  
Burris W. 529 7th st. Washington, D.C.  
Butler H. R. 32 Park place, New York.  
Callan J. N. 617 Louisiana av. Washington  
Callan T. H. 472 Louisiana av. Washington  
Cameron J. W. 1420 New York av. Washington, D.C.  
Carlisle & Elliot, Steubenville, O.  
Carman A. F. 1323 G. st. Washington,  
Carpenter H. H. 206 Broadway, New York  
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Carrington J. McD. 494 Louisiana av. Washington, D.C.  
Carter C. M. 511 7th st. Washington, D.C.  
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Chapin & Co. Springfield, Mass.  
Chapin G. L. 152 Dearborn st. Chicago,  
Chester A. 1016 11th st. Washington, D.C.  
Chichester Clarence, 34 Park row, New York  
Christy G. H. 96 Diamond st. Pittsburgh  
Christy R. 1420 New York av. Washington  
CHURCH & CHURCH, 617 7th st. Washington, D.C.  
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Clapp W. H. Pawtucket, R.I.

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 . 1203 H. st. Washington, D.C.  
 A. 319 4½ st. Washington, D.C.  
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 J. E. 617 Louisiana av. Washington,  
  
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 Norwich, Conn.  
 o. 1307 Corcoran st. Washington, D.C.  
 bros. & McTighe, 1001 Chestnut st.  
 phia, Pa.  
 . 402 6th st. Washington, D.C.  
 W. 510 S. st. Washington, D.C.  
 L. 709 G. st. Washington, D.C.  
 J. 501 J. st. Washington, D.C.  
 W. 330 4½ st. Washington, D.C.  
 B. 218 Locust st. St. Louis, Mo.  
 B. City Hall, Washington, D.C.  
 . D. 325 4½ st. Washington, D.C.  
 . B. & Co. 70 La Salle st. Chicago, Ills.  
 A. 530 9th st. Washington, D.C.  
 42 D. st. Washington, D.C.  
 58 Louisiana av. Washington, D.C.  
 2 Louisiana av. Washington, D.C.  
 . 142 Dearborn st. Chicago, Ills.  
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 . 530 9th st. Washington, D.C.  
 . 529 7th st. Washington, D.C.  
 . A. 1420 F. st. Washington, D.C.  
 . R. 3629 O. st. Washington, D.C.  
 E. 117 C. st. Washington, D.C.  
 St. Charles Hotel, Washington, D.C.  
 & Mackey, 472 Louisiana av. Wash-  
 D.C.  
 regory, 34 School st. Boston, Mass.  
 k J. 503½ D. st. Washington, D.C.  
 25 4½ st. Washington, D.C.  
 . 503½ D. st. Washington, D.C.  
 & Baker, 1411 F. st. Washington, D.C.  
 E. 1 Arcade bldg. Buffalo, N. Y.  
 . 458 Pennsylvania av. Washington,  
  
 W. 3 Corcoran bldg. Washington, D.C.  
 irdett, 925 F. st. Washington, D.C.  
 . 140 Nassau st. New York.  
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 . Springfield, Mass.  
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 . 84 La Salle st. Chicago, Ills.  
 . A. 607 Louisiana av. Washington,  
  
 r W. W. 1226 F. st. Washington, D.C.  
 A. 529 7th st. Washington, D.C.  
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## Patent Solicitors—continued.

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 Darracott F. r. 52, 28 State st. Boston, Mass.  
 Davenport N. Troy, N. Y.  
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 D.C.  
 Davis H. E. 460 Louisiana av. Washington, D.C.  
 Davis T. E. 1427 F. st. Washington, D.C.  
 Davis R. S. 313 4½ st. Washington, D.C.  
 Dayton M. E. 95 5th av. Chicago, Ills.  
 Deane L. 515 7th st. Washington D. C.  
 Dennis W. H. 1425 New York av. Washington,  
 D.C.  
 Denver J. W. 1115 Pennsylvania av. Washington,  
 D.C.  
 Deringer C. 613 15th st. Washington, D.C.  
 Dewees & Hughes, 1411 G. st. Washington, D.C.  
 Dewey & Co. 252 market st. San Francisco, Cal.  
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 Dodge J. S. 429 G. st. Washington, D.C.  
 Dodge Thos. H. Worcester, Mass.  
 Donn E. W. 930 F. st. Washington, D.C.  
 Donn Wilton C. 115 Nassau st. New York.  
 Doolittle W. H. 916 F. st. Washington, D.C.  
 Douglas J. W. & G. L. 49 Corcoran bldg. Wash-  
 ington, D.C.  
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 Dresher Bros. Philadelphia, Pa.  
 Drummer E. 9 Tremont row, Boston, Mass.  
 Drummond & Bradford, 810 F. st. Washington,  
 D.C.  
 Duell, Laass & Hey, Syracuse, N.Y.  
 Duffie J. S. 632 F st. Washington, D.C.  
 Duhamel W. K. 460 Louisiana av. Washington,  
 D.C.  
 Dunlop W. L. 3014 N. st. Washington, D.C.  
 Dye P. E. 514 11th st. Washington, D.C.  
 Dyer & Wilber, 519 F. st. Washington, D.C.  
 Dykenfruth P. C. 204 Dearborn st. Chicago, Ills.  
 Earle J. E. New Haven, Conn.  
 Earle W. E. 12 Corcoran bldgs. Washington,  
 D.C.  
 Eastwood M. 505 7th st. Washington, D.C.  
 Eddy R. H. 76 State st. Boston, Mass.  
 Edmonds J. B. 1625 K. st. Washington, D.C.  
 Edson Bros. 711 G. st. Washington, D.C.  
 Edson J. J. 917 F. st. Washington, D.C.  
 Edson W. 7th Exchange pl. Boston, Mass.  
 Edwards & Barnard, 503 D st. Washington, D.C.  
 Edward V. B. 611 F. st. Washington, D.C.  
 Edwin J. L. 633 F. st. Washington, D.C.  
 Eliot & Eliot, Astor house, New York.  
 Eliot & Robinson, 406 5th st. Washington, D.C.  
 Eliot Boyd, 40 & 41 Astor house, New York.  
 Elliott C. A. 408 5th st. Washington, D.C.  
 Elliott J. G. 204 Dearborn st. Chicago, Ills.  
 Elliott H. R. 406 5th st. Washington, D.C.  
 Ellis T. G. Hartford, Conn.

**Patent Solicitors—continued.**

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 Embrey J. H. 1505 Pennsylvania av. Washington, D.C.  
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 England T. H. 321 4½ st. Washington, D.C.  
 Ennis H. J. 711 G st. Washington, D.C.  
 Ennis J. T. 486 Louisiana av. Washington, D.C.  
 Erskine S. 17 K. st. Washington, D.C.  
 EVANS A. H. & CO. 505 7th st. Washington, D.C.  
 Evans, Padgett & Emmons, 460 Louisiana av. Washington, D.C.  
 Evans R. S. & Co. 1008 F. st. Washington, D.C.  
 Evans J. 607 Louisiana av. Washington, D.C.  
 FAIRMAN JAMES F. Inventors' Institute, Cooper Union, New York, *see index to advertisers.*  
 Fall F. H. 601 D st. Washington, D.C.  
 Falls A. J. 613 15th st. Washington, D.C.  
 Fant H. G. 503½ D st. Washington, D.C.  
 Farnsworth J. F. 50 B. st. Washington, D.C.  
 Fay J. C. 906 14th st. Washington, D.C.  
 Fendall R. 325 4½ st. Washington, D.C.  
 Finckel W. H. 637 F. st. Washington, D.C.  
 Fisher W. H. 12 Wiggins bldg. Cincinnati, O.  
 Fitzgerald W. J. 1006 F. st. Washington, D.C.  
 Flenner J. W. 1754 M. st. Washington, D.C.  
 Flower J. H. 327 Main st. Springfield, Mass.  
 Ford John, 418 Pearl st. New York.  
 Ford J. H. 607 Louisiana av. Washington, D.C.  
 Forrest J. 919 F st. Washington, D.C.  
 Forrest K. 460 Louisiana av. Washington, D.C.  
 Foster & Freeman, 931 F. st. Washington, D.C.  
 Foster J. W. 1405 I. st. Washington, D.C.  
 Fowler C. H. 706 3rd st. Washington, D.C.  
 Fowler J. S. 2119 H. st. Washington, D.C.  
 Fraser C. E. 330 4½ st. Washington, D.C.  
 Frisby William, 120 Broadway, New York.  
 Fullerton J. 424 5th st. Washington, D.C.  
 Grammer C. 319 4½ st. Washington, D.C.  
 Gangener & Walker, 426 Walnut st. Philadelphia, Pa.  
 Gardiner J. B. r. 40 & 41 Astor house, New York.  
 Garnett H. W. 416 5th st. Washington, D.C.  
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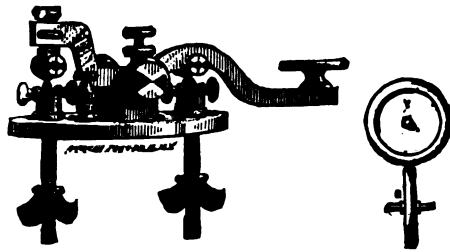
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*Patent Office News* (Howe & Nicholas, editors and publishers), 621 E. st. N. W. Washington, D.C.

*Philip Reis, Inventor of the Telephone* (By Silvanus P. Thompson), E. & F. N. Spon. 35 Murray st. New York.

*Popular Science* (m.) (D. Appleton & Co. pub.) 13 & 5 Bond st. New York.

*Practical Telegrapher* (by Lieut. Jas. A. Swift, pub. by W. J. Johnston) 9 Murray st. New York.

*Science & Progress*, 5 & 7 Arcade ct. Chicago, Ills. John C. Adams, publisher. Price \$1 per annum, sample copy 6 cents. see index to advertisers.

*Science* (illus. weekly journal) (Moses King, pub.) Cambridge, Mass.

*Scientific American & Scientific American Supplement* (Munn & Co. pub.) 261 Broadway, New York.

*Scientific Times* (D. Swigort & Co. pub.) 822 Broadway, New York.

*Telegraphers' Advocate*, (Taltavall & Mitchell) 76 Cortlandt st. New York, see index to advertisers.

## Scientific Societies.

See list of Societies, Libraries, &c.

F.—*Sociétés scientifiques.*

G.—*Wissenschaftliche Vereine.*

College of Electrical Engineering (Henry Groer, agent), 122 E. 26th st. New York.

Electrical Society of Chicago 104 La Salle st. Chicago, Ills.

## Scientific Societies—continued.

Electrical Society of New York.

European Tele. Signal Assoc. New Bedford, Mass. Technological Institute for Engineering, Boston, Mass.

Smithsonian Institute, Washington, D

United States Signal Office, Washington

## Screw Manufacturers.

F.—*Vis, Bornes, etc.*

G.—*Schrauben.*

Chicago Screw Co. 106 W. Wash Chicago, Ills.

Crane & McCloud, Worcester, Mass.

Detroit Machine Screw Works, Detroit

Elyria Screw & Tap Co. Elyria, Cleveland

Estabrook Wire Co. Milford, Mass.

Fellows, J. 14 Durham pl. Brooklyn, N. Y.

Fetter Drive Screw Co. r. 13, 104 Job

Hartford Machine Screw Co. (G. A. president), Hartford, Conn.

Harver Screw Co. 131 South st. Provid

Hope W. H. & Co. Lowell, Mass.

Hotchkiss, Gaylord, Carter & Girard, Cl

Hunter C. E. Hillsdale, N.H.

Joyce & Cridland, Dayton, Cleveland,

Judson H. 9 Alling st. Newark, N.J.

Mue Farren, Levy & Co. Indiana, and Chicago, Ills.

Mass. Screw Co. Holyoke, Mass.

Miles F. S. 205 Quarry st. Philadelphi

Minter H. Worcester, Mass.

Morris & Essex, Brattleboro, Vt.

Mount Carmel Bolt Co. Mount Carmel, Conn.

Newton Bros. Greenville, Norwich, Ct

North-Western Screw Co. C. F. War

Canal st. Factory; Loomis st. co Chicago, Ills.

Nutting L. M. & Co. East Concord, N

Parnell, W. Albany, N.Y.

Philadelphia Screw Co. (Limited), Ph Pa.

Prindle F. B. Milldale, Southingt haven, Conn.

Rochester Machine Screw Co. Brow Rochester, N.Y.

Russell, Burdall & Ward, Port Chese

Russell M. F. G., Erwin & Co. New Ha

Southworth M. & G. Stoughton, Mass.

Standard Mfg. Co. Erie & King Chicago, Ills.

Stockwell Screw and Machine Co. 56 Cleveland, O.

Thurston Manufacturing Co. Marlboro

Turner Joseph, Lowell, Mass.

Union Steel Screw Co. Case av. and Cleveland, Ohio, and 91 Lake st. Ch

Wilder Elihu, 216 Washington st. Bos

Worcester Machine Screw Mfg. Co. Mass.

**Stock, and Die Tap Makers.**

*F.—Vis (Fab. de).*

*G.—Schrauben-Fabriken.*

J. N. & C. 17th st. Venango, Phila-

delphia, Pa.

Irard, Cleveland, Ohio

Screw Co. 106 W. Washington st. Ills.

W & Tap Co. 520 Vine st. Cincinnati, O.

Screw Co. 105 Summer st. Boston, Mass.

H. A. A. & Co. Fitchburg, Mass.

RD MACHINERY SCREW CO.

l, Conn.

MERY & CO. 105 Fulton st. New York. *see index to advertisers.*

T. W. & Co. 30 Hanover st. Boston,

**Shafting, Pulleys, &c.**

*F.—Transmissions (Fab. de).*

*G.—Schäften-Fabriken.*

& F. 60 & 66 Cannon st. & 3 Park pl. New York.

PLACE MACHINERY CO. 121 Nassau st. and 101 Reade st. New York.

WIRE CO. PALMER, MASS, *see index to advertisers.*

**Smelters.**

*F.—Fondeurs.*

*G.—Schmelzer.*

Amiel, 87 N. 5th st. Brooklyn. N. Y.

W. & Co. cor. Wallabout & Bedford av. New York.

OR BRONZE SMELTING CO.

ED, 512 Arch st. Philadelphia, Pa. *see index to advertisers.*

**Speed Indicators.**

*F.—Compteurs de vitesse.*

MERY & CO. 105 Fulton st. New York. *see index to advertisers.*

**Spring Makers.**

*F.—Resorts.*

WIRE CO. PALMER, MASS. *see index to advertisers.*

**Steel Manufacturers.**

*F.—Fabricants d'acier.*

*G.—Stahl-Fabriken.*

MERY & CO. 105 Fulton st. New York.

*see index to advertisers.*

**Storage Batteries.**

*F.—Accumulateurs.*

*G.—Accumulatoren.*

ELECTRIC CO. (Parent Co.) 379 W. Cleveland, Ohio. *see index to advertisers.*

**Telegraph Companies.**

*F.—Télégraphes (Compagnies de).*

*G.—Gesellschaften zur Beförderung von Telegrammen.*

Albany, Troy & Sand Lake Telegraph Co. 120 Broadway, New York.

American Atlantic Cable Telegraph Co. 195 Broadway, New York.

American Automatic Telegraph Company, 52 Broadway, New York.

American District Telegraph Co. 52 S. 5th av. and Broadway, New York.

AMERICAN RAPID TELEGRAPH CO. Broadway, New York.

American Teleg & Cable Co. 195 Broadway, New York.

American Union Telegraph Co. 135 Broadway, New York, and 31 State st. Boston, Mass.

Arrondo Senor Don Bernardo de Director of Telegraphs, Havana, Cuba

Baltimore & Ohio Telegraph Co. 63 & 315 Broadway, 106 Wall st. New York, & 211 Washington st. Boston, Mass.

Baltimore & Waverly Telegraph Co. 49 N. Holliday st. Baltimore, Md.

Bankers & Merchants Telegraph Co. 187 Broadway, New York; 137 Whitehall st. New York;

22 W. 4th st. Cincinnati, O; 23 Metropolitan blk. and 6 Exchange pl. Chicago, Ills. (A. C. Knapp, general manager).

Boston Electric Protective Association, 66 Summer st, Boston, Mass.

Carhart H. S. Evanstown, Ills.

Central American Telegraph & Telephone Co. Sears bldgs. Boston, Mass.

CENTRAL CONSOLIDATED CABLE CO. (W. B. Waycott, manager) 16 Broad st. New York.

Central & South American Telegraph Co. 37 Wall st. New York.

Chicago & Milwaukee Telegraph. Co. (C. G. Scholes, supt.) 7 Exchange pl. Chicago, Ills.

Chicago Telegraph Supply Co. cor. Washington and Market sts. Chicago, Ills.

City & Suburban Telegraph Assurance 4th st. cor. Walnut st. Cincinnati, O.

Commercial Telegram Co. 120 Broadway, New York.

Continental Telegraph Co. r. 43, 95 Milk st. Boston, Mass.

Continental Telegraph Co. 95 Wall, 86 Beaver, 133 Pearl, 71 Worth, & 37 Broad sts. New York.

Del. & Hud. Canal Co. Maiden la. & Dean st. Albany, N.Y.

Direct U. S. Cable Co. 16 Broad st. New York, and 122 State st. Boston, Mass.

District Telegraph Co. (Thos. Roche, general manager), 22 Devonshire st. Boston, Mass.

Domestic Telegraph & Telephone Co. 792 Broad st. New York.

Exchange Telegraphic Co. 2 Broad st. New York.

Fire Alarm and Police Telegraph Co. City Hall, Baltimore, Md.

## Telegraph Companies—continued.

Gamewell Fire Alarm & Telegraph Co. 1½ Barclay st. New York.  
 Gold & Stock Telegraph Co. (Geo. B. Scott, Supt.) 197 Broadway, and 185 5th av. New York, 4th st. c. Vine st. Cincinnati, O. and 7 Merchants Exchange, Boston, Mass.  
 Holmes Burglar Alarm Telegraph Co. 518 Broadway, New York.  
 International Ocean Telegraph Co. 195 & 197 Broadway, New York.  
 Kiernan's Telegraph News Agency of London stock, New York.  
 Law Telegraph Co. 140 Fulton st. New York.  
 Manhattan Dist. Telegraph Co. executive offices, 35 & 37 Vesey st. New York.  
 Manly Telegraph Co. 420 Liberty st. Philadelphia, Pa.  
 Merchants Mfg. & Constn. Co. 84 Broad st. New York.  
 Mexican Telegraph Co. 37 Wall st. New York.  
 Mutual District Messenger Co. (Limited), 29 Murray, 33 Warren, 48 New, 63 Cedar sts. 200, 850, 950 & 1209 B'way, 399 5th av. 812 & 996 6th av. New York.  
 New York Land & Ocean Telegraph Co. 27 William st, New York.  
 Philadelphia Local Telegraph Co. (Hy. Bentley), Philadelphia, Pa.  
 Philadelphia Reading and Pottsville Telegraph Co. 204 So. 4th st. Philadelphia, Pa.  
 Pneumatic Signal Telegraph Co. 75 Astor house, New York.  
 Postal Telegraph Co. 49 Broadway, New York.  
 Sandy Hook, Quarantine & City Island Telegraph Co. 66 Beaver st. New York.  
 Secret Telephone & Telegraph Co. (C. A. Randall genl. manager), 160 Broadway, New York.  
 TIME TELEGRAPH CO. Temple ct. Beekman st. New York, *see index to advertisers.*  
 Watkins Automatic Signal Telegraph Co. 294 Broadway, New York, and 283 Franklin st. Boston, Mass.  
 West India Telegraph and Telephone Co. Ltd. Chillicothe, O.  
 WESTERN UNION TELEGRAPH CO. (R. C. Clowry, gen. supt.) La Salle st. W c. Washington st. Chicago, Ills. 109 State st. Boston, Mass. and 195 Broadway, New York. *See list of officers.*

## Telegraph Instrument Makers.

*F.—Instruments télégraphiques (Fab. d').*

*G.—Telegraphische Instrumente—Fabr.*

BAHR & ZAHN, 108 Liberty st. New York.  
 BOSTON ELECTRIC CO. 550 Washington st, Boston, Mass. *see index to advertisers.*  
 BOWEN, W. J. Norwalk, O. *see index to advertisers.*  
 Buckloy Thos. M. 61 Cedar st. New York.

## Telegraph Instrument Makers—

Carhart H. S. Evanstown, Ills.  
 Chubbucks A. G. & Sons, Utica, N. Y.  
 Cleveland Electrical Mfg. Co. 91 Westm Providence, R. I.  
 CUMMING & BRINKERHOFF, 219 st. New York.

**A PERFECT KEY.**—All telegraphists send postal card to Cumming & Brinkerhoff, 18th Street, New York, and receive, post-paid, illustrated descriptive circular, extracts from some thirty prominent publications in America and the Ohio Mechanics' Institute (under battery five months, 18 ho before making award), and Atlantic reports on the *Cumming Contact Disc Electrodes*, names hundred operators, electricians as who have tested the keys and put in their favor: cuts of instrument this attachment, and medals awarded it in London, Atlanta, Cincinnati and New York. *See circular.* Address as above, 219 E. 18th St., N.



ELECTRICAL SUPPLY CO. 17 Dey York, *see index to advertisers.*

FAIRMAN JAMES F. Inventors' Cooper Union, New York.

Fix & Hermann, 169 & 170 Fulton st. N District Telegraph Instruments.

FLEISCHMANN A. F. 1226 Chestnut delphia. Pa. *see index to advertisers.*

• Gilland R. R. Mishawaka, Ind.

Goodrich & Moore, 180 Main st, Buffalo  
 HERBERT EDW. E. & CO. 159 La Chicago, Ills.

Hubbell & Merwin, New Haven, Conn.

JONES C. E. & BRO. 61 W. 4th st. Cincinnati, O.

Lockwood & Foster, 21 Park row, New

LONGSTREET J. H. 9 Barclay st. New

Lyman A. B. 36 South Water st. Cleveland  
 Merchants Union Telegraph Machine Co bldg. r. 53, Boston, Mass.

MOORE A. F. 200 & 242 3rd N. st. Philadelphia, Pa.

PARTRICK & CARTER, 114 S. 2nd s delphia, Pa.

Pearce & Jones, 79 John st. New York.

Post & Co. Cincinnati, O.

Prentice W. H. Utica, N. Y.

Pride, Fraleigh & Kyle, 23 & 25 Dey st. N

REDDING JEROME & CO. 30 Har Boston, Mass. *see index to advertisers.*

Smith T. J. 81 3rd st, (two doors from Brooklyn, E. D. N. Y.

THE CHAS. WILLIAMS JUN. BROS THE WESTERN ELECTRIC CO. 115 Court st. Boston, Mass. *see index tiners.*

THILLOTSON L. G. & CO. 5 & 7 Dey York, *see index to advertisers.*

UNION ELECTRIC MANUFACTURING New York, *see index to advertisers.*

WESTERN ELECTRIC CO. Chicago York, Indianapolis & Boston, *see advertisers.*

Wirsching Aloys, 28 Centre st. New York



## ph and Telephone Supplies.

—*Appareils pour télégraphie.*

—*Telegraphenbau—Lieferanten.*

Insulator Co. 7 Beekman-st. New York.

J. 40 Broad st. New York.

A. 84 Broad st. New York.

E. 587 & 97 Craig st. Montreal.

Telegraph Supply Co. (Fred W. Roebling)  
10 & 12 Market st. Chicago, Ills.

CAL SUPPLY CO. 17 Dey st. New  
*index to advertisers.*

e Screw Co. 104 John st. New York.

. 40 Cortlandt st. New York.

r A. & Co. 95 Fulton st. New York.

. 94½ Front st. Toronto, Canada.

Fire Alarm Teleg. Co. 1½ Barclay st.  
N.Y.

H. 95 Liberty st. New York.

. 43 Centre st. New York.

C. 120 Broadway, New York.

J. r. 37, 209 Washington st. Boston,

SS C. B. 120 Broadway, New York.

Manufacturing Co. Harrisburg, Pa.

V. & Co. 67 Liberty st. New York.

B. 50 Bromfield st. Boston, Mass.

. H. Louisville, Ky.

E. & BRO. Carlisle bldg. Cincinnati,

urglar Alarm Co. 59 Liberty st.  
N.Y.

✓ F. E. & CO. 145 Broadway, and 86  
street, New York.

THE BATTERY CO. 149 W. 18th st.  
N.Y. *see index to advertisers.*

& Co. 160 W. Main st. Rochester N.Y.

Fuller, 540 W. 16th st. New York.

Thomas A. 540 W. 46th st. New York.

Mnfg. & Construction Co. 54 Broad  
York.

Robert & Co. 672 Craig st. Montreal,

MERY & CO. 105 Fulton st. New  
*see index to advertisers.*

Electrical Supply Co. (H. J. McHugh,  
) 45 Alexander st. Montreal, Canada.

F. F. 7 South st. Baltimore Md.

W & CARTER, 114 S. 2nd st. Phila-  
Pa.

K. 32 S. 7th st. Philadelphia, Pa.

Telephone Co. 4 E. 14th st. New York.

& Co. (57 N. J. Rl. Rd. av.) Newark, N. J.

leigh & Kyle, 23 & 25 Dey st. New York.

. 161 W. Pearl st, Cincinnati, O.

G JEROME & CO. 30 Hanover st.

Mass.

NGS JNO. A. SONS CO. 117 & 119

st. New York & Trenton, N.J.

AU D. 4th av. near 138th st. New York.

omb & Jewellery Co. 33 Mercer st.  
N.Y.

thaw, 259 W. 27th st. New York.

O. 13 W. 4th st. Cincinnati, O.

## Telegraph & Telephone Supplies—contd.

STANDARD ELECTRICAL WORKS, Cin-  
cinnati, O. *see index to advertisers.*

Telegraph Supply Co. 71 Ontario st. Cleveland,  
Ohio.

THE CHARLES WILLIAMS JR. BRANCH  
OF THE WESTERN ELECTRIC CO. 109 &

115 Court st. Boston, Mass. *see index to advertisers.*

TILLOTSON L. G. & Co. 5 Dey & 143 Centre sts.  
New York, *see index to advertisers.*

Triplex Insulated Wire Co. New York.

UNION ELECTRIC MANUFACTURING CO.  
New York, *see index to advertisers.*

Union Switch & Signal Co. Pittsburgh, Pa.

VIADUCT MNFG. CO. (successors to Davis &  
Watts), Office—Chamber of Commerce bld. rs.  
29 & 31. Works—Relay Station, B. & O. Rail-  
way, Md. A. G. Davis, president, *see index to*  
*advertisers.*

W. A. Telegraph Co. (W. Earle) N. Sidney, Nova  
Scotia.

Watt's Telephone Co. Louisville, Ky.

Welmot S. J. Direct Cable Office, Rye, N.H.

WESTERN ELECTRIC CO. 224 Kinzie st.  
Chicago, Ills. 62 N. Church st. New York,  
Indianapolis, Ind. & Boston, Mass. *see index*  
*to advertisers.*

Wirshing Aloys, 28 Centre st. New York.

Wolfe L. W. & Co. 120 S. 14th st. cor. Douglas  
st. Omaha, Neb.

## Telegraph and Telephone Pole

### Manufacturers.

F.—

G.—

BARNES & SNOW, Bangor, Mo. *see index to*  
*advertisers.*

BROWNLEE & CO. foot of Shelby st. Detroit,  
Mich.

DOW GEORGE Q. North Epping, N.H. *see index*  
*to advertisers.*

RIPLEY HENRY C. East Saginaw, Mich. *see*  
*index to advertisers.*

## Telegraph Works.

F.—*Usines de télégraphes.*

G.—*Telegraphen-Fabrik.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

## Telegraphic Codifiers.

F.—*Chiffres pour Télégraphie.*

G.—*Chiffren-Codex für Telegraphisten.*

CUMMING GEO. 219 E. 18th st. New York.  
Meyer's & Garsins Codes.

Harvey H. 125 Pearl st. New York.

Keller John, 88 Walker st. New York.

Law S. C. 30 & 32 Cedar st. New York.

Palmer J. E. 128 Broadway, New York.

Phillips W. P. 187 Broadway, New York.

Shepperson A. B. 25 Beaver st. New York.

Snow Francis H. Victoria bldgs. Greenfell st.  
Adelaide, Australia.

**Telephone Apparatus Makers.**

*F.—Appareils téléphoniques (Fab. d').*

*G.—Telephon-Apparate—Fabr.*

- American Bell Telephone Co. 95 Milk st. Boston, Mass.  
 BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
 BOWEN W. J. Norwalk, O. *see index to advertisers.*  
 BROWNLEE & Co. (Poles), Office, Foot of Shelby st. Detroit, Mich.  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York. *see index to advertisers.*  
 ELGIN TELEPHONE CO. (W. Hubbard, patentee), ELGIN, ILLS.  
 FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
 HERBERT EDWARD E. & CO. 159 La Salle st. Chicago, Ills.  
 Hicatzman A. Howard 346 North Stricker st. Baltimore, Md.  
 HOLCOMB J. R. & CO. Atwater bldgs. Cleveland, O.  
 JONES C. E. & BRO. 51 West 4th st, Cincinnati, O.  
 LONGSTREET, J. H. 9 Barclay st. New York. *see index to advertisers.*  
 Patterson J. M. 91 Grant st. Pittsburgh, Pa.  
 Post & Co. Cincinnati, O.  
 Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.  
 ROEBLING J. A. SONS CO. wire, 117 and 119 Liberty st. New York.  
 Rose, P. L. St. Louis, Mo.  
 Sheridan W. F. & Co. 84 Wall st. New York.  
 Smith T. J. 81 3rd st. (two doors from Broadway) Brooklyn, E.D. N.Y.  
 STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*  
 THE CHARLES WILLIAMS JUN. BRANCH OF THE WESTERN ELECTRIC CO. 109 and 115 Court st. Boston, Mass.  
 TILLIOTSON L. G. & Co. 5 & 7 Dey st. New York, *see index to advertisers.*  
 United States Telephone Mfg. Co. offices, 64 Cedar st. New York.  
 WESTERN ELECTRIC CO. New York, Chicago, Boston & Indianapolis, *see index to advertisers.*

**Telephone Cabinet Work.**

*F.—Téléphones (Fab. de boîtes pour).*

*G.—Telephonkasten—Fabr.*

- French C. B. 1st st & Vernon av. L. 3, New York.  
 Kinsey E. W. 60 & 62 Elizabeth st. New York.

**Telephone Companies.**

*See official list of Exchanges.*

*F.—Compagnies des Téléphones.*

*G.—Telephon-Compagnien.*

- American Bell Telephone Co. room. 52, 95 Milk st. Boston, Mass.  
 American Cont. & Msc. Hall Telephone Co. 95 Milk st. Boston, Mass.  
 American Speaking Telephone Co. 195 Broadway, New York.  
 Bell Telephone Co. 4th & Chestnut sts. Philadelphia, Pa. and 417 Olive st. St. Louis, Mo.

**Telephone Companies—continued.**

- Central and Western Telephone Co. 1101 Chicago, Ills.  
 Chicago Teleph. Co. (Anson Stager, 110 La Salle st. Chicago, Ills.  
 Colorado Telephone Co. Denver, Col.  
 Columbia & Panama Telephone & Tel 43 Montgomery st. Jersey City, N.J.  
 Commercial Telephone Co. 468 B'way, N.Y.  
 Connecticut Telephone Co. New Haven  
 Currier Telephone Bell Co. r. 8, 2 Pen Boston, Mass.  
 Dolbear Electric Telephone Co. 70, W st. Boston, Mass.  
 Duplex Telephone Co. 13 South Water land, Ohio.  
 East Tennessee Telephone Co. 197 New York.  
 Eaton Telephone Co. 65 Henry st. Brook  
 HARBART EDWARD E. & Co. 159 1 Chicago, Ills.  
 Ithaca Telephone Exchange (A. Anth ager) Ithaca, N.Y.  
 Long Island Telephone Co. 379 1 Brooklyn, N.Y.  
 Metropolitan Telegraph & Telephon Greenwich, 82 Nassau, and 97 Spr 195, 198, 792, 923, 943, 1321 & 1415 Whitehall, 35 William & 33 M New York.  
 Mexican National Bell Telephone Co Milk st. Boston, Mass.  
 Mexican Telephone Co. 55 Broadway, Mexican Telephone Co. (G. P. Wiley, City of Mexico.  
 Midland Telephone Co. (Nath. G manager), 110 La Salle st. Chicago Canton, O.  
 National Cap. Telephone Co. 1,413 G ington, D.C.  
 New Orleans Telephone Exchange, 35 ( st. New Orleans, La.  
 NEW YORK ELECTRIC LINES CO F. Sherbourne, manager), New York New York & Pennsylvania Telephone & Co. (W. N. Eustabrook, manager), Els Overland Telephone Co. (Buchanan & 71 Broadway, New York.  
 People's Telegraph & Telephone Co. 4 st. 115 Broadway, & 4 E. 14th st. N Sandy River & Rangeley Telephone Co Me.  
 Secret Telephone & Telegraph Co. 11 way, New York.  
 Southern Bell Telephone & Telegraph Broadway, New York.  
 Suburban Telephone Co. 24 Congress e Mass.  
 Telephone Desp. Co. 40 Pearl st. Bosto Telephone Exchange (H. C. Benaud Meadville, Pa.  
 Tobin F. 1613 Apton st. Philadelphia, Toledo Ohio Exchange Co. (H. M. L. manager), Toledo, O.

**Companies—continued.**

Telegraph & Telephone Co. Limited,  
O. and Jersey City, N.J.  
Telegraph & Telephone Co. (Preston  
general manager), St. John's, Porto  
I. Home address: Franklin, Mass.  
Telephone Co. (Anson Stager, president)  
alle st. Chicago, Ills.  
Telephone Co. 35 William and 33  
ta. New York.

**Phone Instrument Makers.**

*F.—Instruments de téléphones.*

*G.—Telephon-Instrumente.*

leigh & Kyle, 23 & 25 Dey st.  
k.  
EDW. E. & Co. 159 La Salle st.  
Ills.  
St. Louis, Mo.

**Phones—Private Lines Makers.**

*F.—Téléphones.*

*G.—Telephon-bau.*

TELEPHONE CO. (Kane Co.), ELGIN,  
Wm. Hubbard, patentee).  
B J. R. & CO. Atwater buildings,  
d, O.

**g Machines for Wire, etc.**

*—Machines pour essayer le fil.*

CAL SUPPLY CO. Ansonia, Conn. &  
st. New York. *see index to advertisers.*

**Makers—Brass & Copper.**

*F.—Tubes-Laiton et Cuivre.*

*—Röhren-Messing und Kupfer.*

BRASS & COPPER CO. 19 and 21  
New York. *see index to advertisers.*  
er Iron Co. 73 Pearl st. New York  
e Coenties Slip), (Nahum Setson Jr.

be Co. 65 Washington st. New York.  
arles B. 24 John st. New York.  
l, BOOTH & HAYDENS, New York,  
lphia, Pa. Waterbury Conn. and  
, England.

**ie and Water-wheel Makers.**

*F.—Turbines.*

*G.—Wasser-räder.*

WATER MOTOR CO. Newark, N.J.  
WATER MOTOR CO. (R. Chandler,  
x), 14 Cooper Union, New York,  
for driving Electric Machines etc.  
to *advertisers.*  
JAS. & CO. Springfield, Ohio, and  
erty st. New York.

**Underground Systems—(Telegraph.)**

*F.—*

*G.—*

American Sectional Electric Underground Co.  
W. H. Johnson, pres. 216 S. 3rd st. Phila. Pa.  
Brooks D. H. Underground Tel. N. E. cor. 3rd  
and Chestnut sts. Philadelphia, Pa.  
CUMMING & BRINKERHOFF, 219 East 18th  
st. New York, *see index to advertisers.*  
Morse Underground Conduit Co. 220 S. 30th st.  
Philadelphia, Pa.  
U. S. Underground Telegraph Co. 69 William  
st. New York.

**Vices—Parallel—Wrought & Cast Iron.**

*F.—*

*G.—*

MONTGOMERY & CO. 105 Fulton st. New  
York, *see index to advertisers.*

**Vulcanized India Rubber**

**Manufacturers.**

*F.—Guttapercha.*

*G.—Vulkanisirter Indiarubber.*

New York Belting & Packing Co. 29 Park row,  
New York.

**White Lead Manufacturers.**

*F.—*

*G.—Weisblei.*

Devoe F. W. & Co. cor. Fulton and William sts.  
New York.

**Wire Cord Manufacturers.**

*F.—Fils d'acier, etc.*

*G.—Drahtseile.*

PALMER WIRE CO. PALMER, MASS, *see*  
*index to advertisers.*

**Wire Coverers—Cotton.**

*F.—Fils recouverts—Coton.*

*G.—Drahtspinner—Coton.*

AMERICAN ELECTRICAL WORKS, 67  
Stewart st. Providence, R.I. *see index to adver-*  
*tisers.*

ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York, *see index to advertisers.*

ELECTRICAL SUPPLY CO. 17 Dey st. New  
York, and Ansonia, Conn.

HOLMES, BOOTH & HAYDENS, New York,  
Philadelphia, Pa. Waterbury Conn. and Lon-  
don, England.

WESTERN ELECTRIC CO. New York,  
Boston, Chicago, and Indianapolis, *see index*  
*to advertisers.*

**Wire Coverers—Indiarubber and Gutta**

**Percha.**

*F.—Fils recouvert—Indiarubber.*

*G.—Drahtspinner—Indiarubber.*

**AMERICAN ELECTRICAL WORKS,** 67 Stewart st. Providence, R.I. *see index to advertisers*

**ELECTRICAL SUPPLY CO.** 17 Dey st. New York, and Ansonia, Conn. *see index to advertisers.*

**TAYLOR G. CROSLAND,** Dee Side Electric Works, Neston, Cheshire, England. *see index to British advertisers.*

**Wire Coverers—Insulated.**

*F.—Fils recouvert.*

*G.—Drahtspinner.*

**AMERICAN ELECTRICAL WORKS,** 67 Stewart st. Providence, R.I. *see index to advertisers.*

**TAYLOR G. CROSLAND,** Dee Side Electric Works, Neston, Cheshire, England. *see index to British advertisers.*

**WESTERN ELECTRIC CO.** New York, Boston, Chicago, and Indianapolis, *see index to advertisers.*

**Wire Coverers—Silk.**

*F.—Fils recouvert Soie.*

*G.—Drahtspinner—Seide.*

**AMERICAN ELECTRICAL WORKS,** 67 Stewart st. Providence, R.I. *see index to advertisers.*

**ANSONIA BRASS & COPPER CO.** 19 and 21 Cliff st. New York, *see index to advertisers.*

**ELECTRICAL SUPPLY CO.** 17 Dey st. New York. *see index to advertisers.*

**WESTERN ELECTRIC CO.** New York, Boston, Chicago, and Indianapolis, *see index to advertisers.*

**Wire Draw Plate Manufacturers.**

*F.—Plaque pour Tréfilers.*

*G.—Drahteisen.*

**PALMER WIRE CO. PALMER, MASS.** *see index to advertisers.*

**MONTGOMERY & CO.** 105 Fulton st. New York, *see index to advertisers.*

**Wire Gauge Makers.**

*F.—*

*G.—Draht-Messer.*

**PALMER WIRE CO. PALMER, MASS.** *see index to advertisers.*

**Wire Manufacturers.**

*F.—Fils (Fab. de).*

*G.—Draht-Fabriken.*

**Allen James B.** 231 Vine st. Philadelphia, Pa.

**Armstrong Rowland J.** 1321 Ridge delphia, Pa.

**AMERICAN ELECTRICAL WORK**

dence, R.I. *see index to advertisers.*

**ANSONIA BRASS & COPPER CO**

Cliff st. New York, *see index to adve*

**Balderston H. & Son,** 66 G. Calvert st.

Md.

**Barnum E. T.** Detroit, Mich.

**Barten Clement,** 138 N. 6th st. Philad

**Bassel V.** 326 Manager st, Brooklyn, 2

**Bateman Daniel & Sons,** Carpenter st. S

st. Philadelphia, Pa.

**Benedict & Burnham Mfg. Co. (H. C**

Agent), 15 Oliver st. Boston, Mass.

**Bogen E. E.** Prospect & Nend avs.

Ohio.

**Bonnell J. H. & Co.** 24 Cliff st. New Y

**Boughan James A.** 24 Cliff st. New Yo

**BRIDGEPORT BRASS CO.** 19 Murri

York, *see index to advertisers.*

**Brockner, Evans & Co.** 422 West st. 1

**Bromhead G. Paterson st.** Jersey City, N

**Brown & Bros.** Waterbury, Conn.

**Cable William Excelsior Wire Man**

Co. 43 Fulton st. New York.

**California Wire Works Co.** 6 Califor

Francisco, Cal.

**Carey & Moen,** 234 W. 29th st. New Y

**Cary & Mohen,** (Mershon & Bancroft, 1

170 Lake st. Chicago, Ills.

**Cary & Niven,** 164 Lake st. Chicago, I

**Cleveland R. M. Co.** 239 Franklin st. Bos

90 Water st. Cleveland, O. and 91

Chicago, Ills. (N. D. Pratt agent).

**Cleveland W. Works,** 756 St. Clair st. 1

**Cooper, Hewitt & Co.** 17 Burling st. N

**Crandal Mfg. Co.** E. M. Crandal, p

W. Eaton, sec. 74 Michigan st. Chic

**Darby Edward & Sons,** 231 Arch s

delphia, Pa.

**Davitt & Sons,** 1207 Dekalb av. Brookl

**Day A. G.** 120 Broadway, New York.

**Dewitt Wire Mfg. Co.** Belleville, N.J.

**Dufor & Co.** 34 N. Howard st. Baltimo

**Eagleton Mfg. Co.** 163 Lake st. Chicag

**Eastwood Wire Mfg. Co.** Belleville, N.

**ELECTRICAL SUPPLY CO.** 17 Dey

York, *see index to advertisers.*

**English Arthur,** 133 W. Lake st. Chica

**Falls Wire Mfg. Co.** Cuyahoga Falls, O

**Fennel James P.** 36 N. 6th st. Philadel

**Fles Frederick,** 2451 Ridge av. Philade

**Forman J.** 127 South st. Brooklyn, N.

**Forsey Wm. S.** 10 Old Slip. New York

**Gautier Steel Co. Limited,** Philadelphia

**Gilbert & Bennett Mfg. Co.** 42 Cliff st. 2

**Globe R. M. Co.** Cincinnati, Ohio.

**Hale B. S. & Son,** Malden, Mass.



**Manufacturers—continued.**

Co. 704 Arch st. Philadelphia, Pa.  
 & Raimer, 1340 Vienna st. Phila-  
 Pa.  
 MFG. CO. (agent C. M. Thompson),  
 y st. New York.  
 Wire Co. 816 High st. St. Louis, Mo.  
 Waterbury, Conn.  
 Wire Works (Jonas & Colver), Hartford,  
 h W. E. & Co. 31 Oliver st. Boston,  
 Baker, Columbus, Ohio.  
 G. 219 Bowery, New York.  
 outh & Haydens (agt. D. F. Urquhart),  
 al st. Boston, Mass.  
 Wire Works, Holyoke, Mass.  
 miss & Co. Leicester, Mass.  
 Morse, 1197 Dekalb av. Brooklyn,  
 .97 Court st. Brooklyn, N.Y.  
 ire Works, Covington, Ky.  
 Co. Worcester, Mass.  
 r. & Co. 491 N. 3rd st. Philadelphia,  
 outhampton, Mass.  
 Brother, 461 St. Clair st. Cleveland, O.  
 Co. Olmsted Falls, Ohio.  
 Taylor Wire Co. 219 Market st.  
 is, Mo.  
 John, 109 John st. New York.  
 G. Covington, Ky.  
 P. 200 N. 3rd st. Philadelphia, Pa.  
 I. Detroit, Mich.  
 Co. (Granville Nicholson v. pres. and  
 r.) 36 Dearborn st. Chicago, Ills.  
 n Wire Co. New Haven, Conn. 51 &  
 lle st. Chicago, Ills. (gt. G. L. Poor).  
 & Rope Co. 21 Astor house, New York.  
 . 349 Adams st. Brooklyn, N.Y.  
 365 Ontario st. Cleveland, Ohio.  
 WIRE CO. PALMER, MASS. *see*  
*advertisers.*  
 William, 202 N. 13th st. Phila-  
 Pa.  
 e Works, 4428 Walnut st. Phila-  
 Pa.  
 ston L. 27 S. 2nd st. Philadelphia, Pa.  
 ia Wire Works, 1340 Vienna st. Phila-  
 Pa.  
 OR BRONZE SMELTING CO. LI-  
 , 512 Arch st. Philadelphia, Pa. *see*  
*advertisers.*  
 . 43 Summer av. Brooklyn, N.Y.  
 Graham J. & Co. 829 Willow st.  
 phia, Pa.  
 . W. & Co. Dwight st. Holyoke, Mass.  
 C. Chariton, Mass.  
 Thomas R. 35 S. 23rd st. Philadelphia,  
 a F. G. 107 John st. New York.  
 Thomas, 1210 Buttonwood st. Phila-  
 Pa.

**Wire Manufacturers—continued.**

ROEBLING JOHN A. SONS CO. Trenton,  
 N.J. 117 Liberty st. New York and San Fran-  
 cisco, Cal.  
 Savidge George W. 4136 Market st. Philadelphia,  
 Pa.  
 Schmitt P. 156 Graham av. Brooklyn, N.Y.  
 Schnabel & Co. 34 S. Canal st. Chicago, Ills.  
 Schweis J. H. 231 Larimer st. Brooklyn, N.Y.  
 Scoville Mfg. Co. 183 Lake st. Chicago, Ills.  
 Sherman & Marsh, 10 Old Slip, New York.  
 Smith Bros. 17 Henry st. Brooklyn, N.Y.  
 Southcomb & Bro. 7 N. Eutaw st. Baltimore, Md.  
 Spencer Wire Co. (treas. R. Sugden) Spencer, Mass.  
 Standard Steel Works, 220 S. 4th st. Phila-  
 delphia, Pa.  
 Staniar & Laffey, 53 Fulton st. New York.  
 Stewart & Co. So Eastern, Pa.  
 Stidman & Co. 16 N. Frederick st. Baltimore, Md.  
 Strawbridg & Chase, 40 N. 6th st. Philadelphia,  
 Pa.  
 Taylor W. & Co. 12 Bratenhall blk. Cleveland, O.  
 THE CHARLES WILLIAMS JR. BRANCH  
 OF THE WESTERN ELECTRIC CO. 109  
 and 115 Court st. Boston, Mass.  
 TILLOTSON L. G. & CO. 5 & 7 Dey st.  
 New York, *see index to advertisers.*  
 Townsend W. P. & Co. 19 Market st.  
 Pittsburgh, Pa.  
 Trenton Iron Co. 17 Burlington st. New York,  
 and 21 N. 4th st. Philadelphia, Pa.  
 Triplex Insulator Wire & Rubber Co. 539 W.  
 24 st. and 10 Cedar st. New York.  
 Union Iron & Steel Co. 5 & 89 Madison st.  
 Chicago, Ills.  
 Wallace & Sons, 89 Chambers & 71 Reade sts.  
 New York.  
 Wallace & Son, Ansonia, Conn.  
 WASHBURN & MOEN MFG. CO. (H. B.  
 Crugin, agent) 107 & 109 Lake st. Chicago,  
 Ills. & 94 Grove st. Worcester, Mass.  
 Watson Thomas, 48 N. Front st. Philadelphia, Pa.  
 Wilmington Wire Works, Wilmington, Del.  
 Worcester Wire Co. Cambridge st. Worcester,  
 Mass.

**Wire Manufacturers—Brass.**

*F.—Fils-Bronze.*

*G.—Draht-Messing.*

ANSONIA BRASS & COPPER CO. 19 and 21  
 Cliff st. New York, *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey st.  
 New York, *see index to advertisers.*  
 Hopkins' New York Steam Wire Works, 90 W.  
 Broadway, New York.  
 HOLMES, BOOTH & HAYDENS, New York,  
 Philadelphia Pa. Waterbury Conn. and  
 London, England.  
 PALMER WIRE CO. PALMER, MASS. *see*  
*index to advertisers.*  
 Plume & Attwood Mfg. Co. (agent H. McRoberts)  
 115 Lake st. Chicago, Ills.

**Wire Manufacturers—Copper.**

*F.—Fils de Cuivre (Fab. de).*

*G.—Kupfer-Draht.*

AMERICAN ELECTRICAL WKS. 67 Stewart  
ts. Providence, R.I. *see index to advertisers.*  
ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York. *see index to advertisers.*  
Benedict & Burnham Mfg. Co. 13 Murray st.  
New York and Waterbury, Conn.  
ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, New York,  
Boston, Mass. Philadelphia, Pa. Waterbury,  
Conn. and London, England.  
PALMER WIRE CO. PALMER, MASS. *see*  
*index to advertisers.*  
Plume & Atwood Manufacturing Co. (agent H.  
McRoberts), 115 Lake st. Chicago, Ills.

**Wire Manufacturers—Covered.**

*F.—Fils recouverts.*

*G.—Umspannener Draht.*

AMERICAN ELECTRICAL WORKS, 67  
Stewart st. Providence, R.I. *see index to adver-*  
*tisers.*  
ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York. *see index to advertisers.*  
ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, New York,  
Philadelphia, Pa. Waterbury, Conn. and Lon-  
don, England.

**Wire Manufacturers—Galvanized Iron.**

*F.—Fils de fer.*

*G.—Eiserner-Draht.*

ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
Lefferts, Marshall & Co. 90 Beekman & 496  
Cherry sts. New York.  
PALMER WIRE CO. PALMER, MASS. *see*  
*index to advertisers.*  
ROEBLINGS J. A. SONS CO. Trenton, N.J.  
New York and San Francisco, Cal.

**Wire Manufacturers—German Silver.**

*F.—Fils de laiton.*

*G.—Draht—Alfenide.*

ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*

**Wire Manufacturers—Insula**

*F.—Fils-isolés.*

*G.—Isolirter Draht.*

AMERICAN ELECTRICAL WKS. 67  
st. Providence, R.I. *see index to advert*  
ANSONIA BRASS & COPPER CO.  
Cliff st. New York. *see index to advert*  
DAY A. G. (agent Clark B. Hotchkiss) 11  
way, New York. *see index to advertiser*  
ELECTRICAL SUPPLY CO. 17 Dey  
York. *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, N  
Boston, Mass. Philadelphia, Pa. W  
Conn. and London, England.  
MOORE, A. F. 200 & 202 N. 3rd st. Phi  
Pa. *see index to advertisers.*  
Triplex Insulated Wire & Rubber Co  
24th and 10 Cedar sts. New York.

**Wire Manufacturers—Iron and**

*F.—Fils de fer et d'acier.*

*G.—Draht—Eisen und Stahl.*

ELECTRICAL SUPPLY CO. 17  
New York. *see index to advertisers.*  
Long Island Wire & Iron Works, 349  
Brooklyn, N.Y.  
PALMER WIRE CO. PALMER, M  
*index to advertisers.*  
ROEBLINGS J. A. SONS CO. Trent  
New York and San Francisco, Cal.

**Wire Manufacturers—Phosphor**

*F.—Fils de phosphore-bronze.*

*G.—Draht—Phosphor-Bronze.*

PHOSPHOR BRONZE SMELTING  
512 Arch st. Philadelphia, Pa. *see*  
*advertisers.*

**Wire Manufacturers—Telegr**

*F.—Fils de télégraphie.*

*G.—Telegraphen-Draht.*

ELECTRICAL SUPPLY CO. 17  
New York, and Ansonia, Conn. *see*  
*advertisers.*  
ANSONIA BRASS & COPPER CO.  
Cliff st. New York.  
Hazard Manufacturing Co. 87 La  
New York.  
HOLMES, BOOTH & HAYDENS, N  
Philadelphia, Pa. Waterbury, Conn.  
don, England.  
PALMER WIRE CO. PALMER, M  
*index to advertisers.*

**Manufacturers—Telephone.**

*F.—Fils pour téléphones.*

*G.—Draht-Telephonen.*

AN ELECTRICAL WORKS, 67  
t. Providence, R.I. *see index to adver-*

AN SPIRAL TELEPHONE WIRE  
Milk st. Boston Mass.

A BRASS & COPPER CO. 19 & 21  
New York, *see index to advertisers.*

z. (agent Clark B. Hotchkiss) 120 Broad-  
ew York, *see index to advertisers.*

ICAL SUPPLY CO. 17 Dey st.  
ork, and Ansonia, Conn. *see index to*  
*ers.*

o) MNFG. CO. (agent, C. M.  
son) 87 Liberty st. New York.

3, BOOTH & HAYDENS, New York,  
lphia, Pa. Waterbury, Conn. and  
t, England.

z WIRE CO. PALMER, MASS. *see*  
*advertisers.*

NGS J. A. SONS CO. Trenton,

E. S. & Co. New Haven, Conn.

z & Co. New Haven, Conn.

**Wire Staples Manufacturers.**

z WIRE CO. PALMER, MASS., *see*  
*advertisers.*

**Wire Workers and Weavers.**

*F.—Tréfileurs.*

*G.—Draht-Fabriken.*

z WIRE CO. PALMER, MASS. *See*  
*advertisers.*

NGS J. A. SONS CO. Trenton, N.J.  
ork and San Francisco, Cal.

**Zinc Manufacturers.**

*F.—Zinc (Fab. de).*

*G.—Zink-Fabrikanten.*

Bergen Point Zinc Co. 13 Burling st. New York,  
and Bayonne, N.J.

Crocker Bros. & Son, 11 Broad st. Boston, Mass.

Devoc F. W. & Co. Fulton and William sts.  
New York.

Eagle Zinc Works, Hatchmaker, Cincinnati, O.

Edes O. Hart L. & Co. Plymouth, Mass.

Illinois Zinc Co. Peru, Ills.

Kinsman, Gundy & Perry, La Salle st, Chicago,  
Ills.

Kremer J. 25 Jesse st. San Francisco, Cal.

Lehigh Co. Bethlehem, Pa.

Lehigh Zinc Co. 333 Walnut st. Philadelphia, Pa.

Lehigh Zinc & Iron Co. Limited, 13 Platt st.  
New York.

Lund A. G. 98 N Wells st. Chicago, Ills.

McDonagh William & Co. 189 Front st. New York.

Manning & Squeer, 113 Liberty st. New York.

Mathiosen & Hegeler, La Salle st, Chicago, Ills.

Mercer Zinc Works. Trenton, N.J.

Meyerscieck M. & Co. Cincinnati, O.

Missouri Zinc Co. J. M. R. St. Louis, Mo.

N. J. Zinc Co. Fort Richards, N.J.

N. J. Zinc & Iron Co. 61 Maiden la. New York.

NORTHROP A. C. Waterbury, Conn. *see index*  
*to advertisers.*

Osgood F. & Co. 13 Burling st. New York.

Pacific Zinc Ore Factory, 569 Mission st. San  
Francisco, Cal.

PALMER WIRE CO. PALMER, MASS.

Passaic Zinc Co. Jersey City, N.J. & 113 Liberty  
st. New York.

Schweizer J. 54 Metro av. Brooklyn, N.Y.

Seelig M. J. & Co. 115 Manager st. Brooklyn, NY.

Stole J. A. 588 Grand st. Brooklyn, N.Y.

Warren Bros. 47 W Lake st. Chicago, Ills.

Wellenberg Henry, 7 Thompson st. New York.

Wilhelm A. & Co. 221 Poplar st. Reading, Pa.

Wood N. & Co. Plymouth, Mass.

**Zinc Rod Manufacturers.**

*F.—*

*G.—Verfertiger von Zinkstäben.*

ANSONIA BRASS & COPPER CO. 19 & 21  
Cliff st. New York, *see index to advertisers.*

## OFFICIAL LIST OF RAILWAY PURCHASING AGENTS

OF THE

## UNITED STATES AND CANADA.

SHOWING ROAD, PURCHASING AGENT AND ADDRESS.

In this list it is intended to give the name and address of all persons having charge of the purchasing of supplies. On many roads this duty is performed by officers who are not designated by the title "Purchasing Agent." These officials are included in this list, and are designated as follows:—  
 ‡ President; § Receiver; \* General Manager; † General Superintendent; ‡ Master Mechanic.

Adirondack—C. E. Durkee, Saratoga Springs, N.Y. Alabama Central Div. E. Tennessee, Va. & Ga.—John M. Bales, Selma, Ala. Alabama Great Southern, R. W. Healy, Cincinnati, O. Albert—G. A. Robinson, Hillsborough, N.H. Allegheny Central—W. O. Chapman, Friendship, N.Y. Allegheny Valley—David McCargo, Pittsburgh, Pa. Alma & Little Rock—A. C. Wilkinson, Alma, S.C. Anderson, Lebanon & St. Louis—J. A. Larned, Anderson, Ind. Annapolis & Elk Ridge—Wm. H. Bians, Baltimore, Md. Arizona Central—Samuel A. Henszey, Prescott, Arizona. Arkansas Midland—A. H. Johnson, Helena, Ark. Asheville & Spartanburg—J. J. Anderson, Spartanburg, S.C. Ashland Coal & Iron—Robert Peebles, Ashland, Ky. Ashuelot—J. J. Mulligan, Springfield, Mass. Ashtabula & Pittsburgh—W. Mullins, Pittsburgh, Pa. Atchison, Topeka & Santa Fe—Frank M. Smith, Topeka, Kansas. Atlanta & West Point—L. P. Grant, Atlanta, Ga. Atlantic & North Carolina—F. C. Roberts, Newbern, N.C. Atlantic, Gulf & W. I. Trans.—D. E. Maxwell, Fernandina, Fla. Atlantic, Tennessee & Ohio—J. J. Gormley, Charlotte, N.C. Atlantic & Pacific—D. B. Sibley, Chicago, Ill. Atlantic & French Broad—W. J. Kirk, Edgefield, S.C. Augusta & Knoxville—E. F. Verdery, Augusta, Ga. Austin & Northwestern—A. L. Rhamley, Austin, Tex.

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 Hudson Telegraph & Telephone Co.—Chatham, Hudson, Valatie, N.Y.  
 New York & Vermont Telegraph & Telephone Co.—Hosack Falls, New York.  
 Union Telegraph & Telephone Co.—Ballston, Glen Falls, Mechanicsville, Saratoga, N.Y.  
 Commercial Telephone Co. of Troy (Troy, N.Y.)—Troy, N.Y.  
 Connecticut Telephone Co. (New Haven, Conn.)—Birmingham, Bridgeport, Essex, Guilford, Hartford, Killingly, Middletown, Meriden, Middletown, New Britain, New Haven, New London, New Milford, Norwich, Putnam, Stafford, Stonington, Vernon, Waterbury, Willimantic, Conn.  
 Cozens & Bull (Newport, R.I.)—Newport, R.I.  
 Creston Telephone Exchange, (Creston, Iowa.)—Creston, Iowa.  
 Crookston Telegraph & Telephone Exchange & Electric Light Co., (Crookston, Minn.)—Crookston, Minn.  
 Cumberland Telephone & Telegraph Co. (Nashville, Tenn.)—Carmi, Ill.; Booneville, Evansville, Mount Vernon, Paducah, Rockport, Tell City, Ind.; Caseyville, Earlinton, Henderson, Owensboro', Uniontown, Ky.; Columbia, Ga.  
 Jackson, Lebanon, Murfreesborough, Nashville, Tenn.  
 Danbury Telephone Despatch Co. (Danbury, Conn.)—Danbury, Conn.  
 Danville Telephone Co. (Danville, Ind.)—Danville, Ind.  
 Duluth Telephone Co. (Duluth, Minn.)—Duluth, Minn.  
 East Tennessee Telephone Co. (New York, N.Y.)—Frankport, Hopkinsville, Lexington, Maysville, Paducah, Ky.; Paducah, Clarksville, Knoxville, Tenn.  
 Empire State Telephone & Telegraph Co. (Auburn, N.Y.)—Auburn, Canandaigua, Cortland, Fulton, Geneva, Seneca Falls, Waterloo, N.Y.  
 Exchange Bell Telephone Co. (Lyons, Iowa.)—Bedford, Corning, Mount Ayr.  
 Freeport Telephone Exchange Co. (Freeport, Ill.)—Freeport, Ill.  
 Glenwood Telephone Exchange Co. (Glenwood, Ia.)—Glenwood, Iowa.  
 Grand Forks Telephone Co. (Grand Forks, Dak.)—Grand Forks, Dak.  
 Granite State Telephone Co. (Manchester, N.H.)—Manchester, N.H.  
 Hanover Telephone Exchange (Hanover, Penn.)—Hanover, Penn.  
 Hastings Telephone Exchange, (Hastings, Neb.)—Hastings, Neb.  
 Hazard, Rowland, G., 2d. (Peacedale, R.I.)—Narragansett Pier, R.I.  
 Hudson River Telephone & Telegraph Co. (New York, N.Y.)—Fishkill, Middletown, Newburgh, Port Jervis, Poughkeepsie, N.Y.; Honesdale, Penn.  
 Idaho Telephone & Telegraph Co.—Ogden, City, U.T.  
 Ingham, Glidden & Downs (Lowell, Mass.)—Burlington, Rutland, Saint Albans, Vt.  
 Iowa & Minnesota Telephone Co. (Dubuque, Iowa.)—Allison, Charles City, Cresco, Decorah, Eldora, Ackley, Iowa.  
 Emmetsburg, Garner, Hampton, Lansing, Le Mars, Manchester, Mason City, McGregor, Orange City, Osage, don, Sioux City, Spencer, Spirit Lake, Storm Lake, Waverly, Webster City, West Union, Fayette, Iowa.  
 Iowa Telephone & Telegraph Co. (Davenport, Iowa.)—Adel, Albia, Anamosa, Atlantic, Bloomfield, Boone, Cent Chariton, Corydon, Dakota, Fairfield, Fort Dodge, Guthrie Centre, Harlan, Independence, Indianola, Iowa, Knoxville, Leon, Marengo, Montezuma, Mount Pleasant, Muscatine, Newton, Osceola, Oskaloosa, Sigourney, Toledo, Vinton, Wapello, Washington, Waterloo, Winterset, Iowa.  
 Jackson County Bell Telephone Co. (Maquoketa, Iowa.)—Bellevue, Maquoketa, Sabula, Iowa.  
 Jamestown Telegraph and Telephone Co. of Jamestown, Stutsman Co., Dak. (Jamestown Dak.)—Jamestown, Dak.  
 Johnson, L. (Vincennes, Ind.)—Olney, Ill.; Bloomfield, Greensburg, Seymour, Shelbyville, Vincennes, Washington Joplin Telephone Co. (Carthage, Mo.)—Joplin, Nevada, Mo.  
 Lambertville Telephone Exchange, (Lambertville, N.J.)—Lambertville, N.J.  
 Leadville Telephone Co. (Leadville, Col.)—Leadville, Col.  
 Leary, William A. (Davenport, Iowa.)—Clarinda, Shenandoah, Iowa.  
 Lingle, George R. (Clinton, Mo.)—Clinton, Mo.  
 Louisiana Telephone Co. (New Orleans, La.)—Baton Rouge, Monroe, New Orleans, Shreveport, La.; Aberdeen, Cal Greenville, Grenada, Holly Springs, Jackson, Meridian, Natchez, Vicksburg, Winona, Woodville, Yazoo City, Marshalltown Telephone Co., (Dubuque Iowa.)—Marshalltown, Iowa.  
 Memphis Telephone & Electric Co. (Memphis Tenn.)—Memphis, Tenn.  
 Merchants' Telephone & Telegraph Co. of Kansas & Missouri (Kansas City, Mo.)—Burlington, Caldwell, Clyde, El Port Scott, Girard, Hiawatha, Independence, Junction City, Lawrence, Newton, Olathe, Osage City, Ottawa, P Salina, Wellington, Wichita, Winfield, Kan.; Rich Hill, Mo.  
 Metropolitan Telephone & Telegraph Co. (New York, N.Y.)—New York, N.Y.  
 (Sub-Licenses)  
 Domestic Telegraph & Telephone Co.—Newark, N.J.  
 New York & New Jersey Telephone Co.—Ashbury Park, Bayonne, Bloomfield & Montclair, Dover, El Englewood, Hackensack, Hoboken, Jersey City, Long Branch, Madison, Morristown, New Brunswick, Passaic, Paterson, Plainfield, Rahway, N.J.; Babylon, Brooklyn, Williamsburg, Greenpoint, East New Flushing, Far Rockaway, N.Y.  
 Westchester Telephone Co.—Mt. Vernon, New Rochelle, Port Chester, Sing Sing, Tarrytown, White Yonkers, N.Y.  
 Staten Island Telephone Exchange Co.—New Brighton, Port Richmond, N.Y.  
 Midland Telephone Co. (Chicago, Ill.)—Bluffton, Columbia City, Elkhart, Fort Wayne, Goshen, Huntington, North Chester, Plymouth, Portland, Union City, Wabash, Warsaw, Winchester, Ind.; Akron, Alliance, Ashland, Ash Bellefontaine, Bucyrus, Canton, Massillon, Chillicothe, Circleville, Columbus, Dayton, Delaware, Delphos, Findlay, Fremont, Fostoria, Gallon, Gallipolis, Greenville, Hillsborough, Ironton, Jackson, Kenton, Lancaster Logan, London, Mansfield, Marysville, Medina, Miamisburgh, Mount Vernon, Napoleon, Newark, Norwalk, Painesville, Pomeroy, Port Clinton, Portsmouth, Ravenna, Shelby, Sidney, Springfield, Tiffin, Toledo, Troy, Upper Sandusky, Urbana, Van Wert, Waverly, Washington Court House, Wilmington, Wooster, Young Zanesville, Ohio.  
 Missouri and Kansas Telephone Co. (Kansas City, Mo.)—Atchison, Leavenworth, Topeka, Boonville, Canton, Car Columbia, Fulton, Hannibal, Independence, Jefferson, City, Kansas City, Louisiana, Moberly, Sedalia St. Marshall, Mexico, Trenton, Mo.  
 Missouri Telephone Co. (Kansas City, Mo.)—Springfield, Mo.  
 Montana Telephone and Telegraph Co. (Ogden City, Utah.)—Butte City, Deer Lodge, Helena, Montana.  
 National Bell Telephone Co. of the State of Me. (Lowell, Mass.)—Fitchburg, Lowell, Worcester, Mass.; Augusta, Bath, Biddeford, Calais, Ellsworth, Lewiston, Portland, Rockland, Skowhegan, Waterville, Me.  
 National Capital Telephone Co. (Washington, D.C.)—Washington, D.C.  
 Nebraska City Telephone Exchange Co. (Nebraska City, Neb.)—Nebraska City, Neb.  
 Nebraska Telephone Co. (Omaha, Neb.)—Council Bluffs, Iowa.; Beatrice, Blair, Brownville, Crete, Columbus, Davis Fairmont, Falls City, Fremont, Grand Island, Kearney, North Platte, Lincoln, Omaha, Plattsmouth, Schuyler, St. Paul, Tecumseh, Wahoo, Neb.

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**New York & Pennsylvania Telephone & Telegraph Co.** (New York, N.Y.)—Bath, Binghamton, Bolivar, Corning, Dunkirk, Elmira, Forestville, Hornellsville, Ithaca, Jamestown, Mayville, Oswego, Richburg, Watkins, Waverly, N.Y.; Bradford, Corry, Towanda, Troy, Warren, Penn.

**Northern New York Telephone & Telegraph Co.** (Troy, N.Y.)—Chaplain, Malone, Plattsburg, Port Henry, N.Y.

**North Pennsylvania Telephone Co.** (Scranton, Penn.)—Hazleton, Pittston, Scranton, Wilkes-Barre, Penn.

**Northwestern Telephone Exchange Co.** (Minneapolis, Minn.)—Bismarck, Fargo, Dak.; Moorhead, Brainerd, Faribault, Fergus Falls, Mankato, Minneapolis, St. Paul, Red Wing, St. Cloud, Stillwater, Wabasha, Winona, Minn.

**Ogden Telephone Exchange Co.** (Ogden City, Utah.)—Laramie, Ogden City, Provo City, Utah.

**Ohio Valley Telephone Co.** (Louisville, Ky.)—Jeffersonville, New Albany, Ind.; Louisville, Ky.

**Pacific Bell Telephone Co.** (San Francisco, Cal.)—Tucson, Arizona; Anaheim, Fresno, Los Angeles, Martinez, Oakland, Sacramento, San Diego, San Francisco, San José, Santa Cruz, Stockton, Cal.; Eureka, Virginia City, Nev.; Portland, Oregon; Seattle, Walla Walla, W. Terr'y.

**Pekskill Telephone Co.** (Pekskill, N.Y.)—Pekskill, N.Y.

**Pennsylvania Telephone Co.** (Harrisburg, Penn.)—Allentown, Bangor, Bethlehem, Carlisle, Chambersburg, Columbia, Easton, Harrisburg, Lancaster, Lebanon, Mauch Chunk, Pottsville, Reading, York, Penn.

**Plymouth & Campton Telephone Exchange Co.** (Plymouth, N.H.)—Plymouth, N.H.

**Providence Telephone Co.** (Providence, R.I.)—Hope Valley, Pawsoag, Providence, R.I.

**Red Oak Telephone Co.** (Red Oak, Iowa.)—Red Oak, Iowa.

**Marion, Henry & Co.** (Marion, Ohio.)—Marion, Ohio.

**Southwestern Dakota Telephone & Telegraph Co.** (Yankton, Dak.)—Huron, Mitchell, Pierre, Sioux Falls, Watertown, Yankton, Dak.

**Southern Bell Telephone & Telegraph Co.** (197, Broadway, New York, N.Y.)—Birmingham, Gadsden, Huntsville, Mobile, Montgomery, Selma, Ala.; Cedar Keys, Fernandina, Gainesville, Jacksonville, Fla.; Sioux Falls, Watertown, Yankton, Dak.; Key West, Pensacola, Fla.; Albany, Augusta, Athens, Atlanta, Brunswick, Columbus, Macon, Rome, Ga.

**Southern Bell Telephone & Telegraph Co.** (197, Broadway, New York, N.Y.)—Savannah, Thomasville, Ga.; Charlotte, New Bern, Raleigh, Wilmington, N.C.; Charleston, Columbia, Georgetown, Greenville, Newberry, Orangeburg, S.C.; Alexandria, Danville, Lynchburg, Norfolk, Petersburg, Portsmouth, Richmond, Staunton, Va.; Charleston, Mason, W. Va.

**Southern Massachusetts Telephone Co.** (New Bedford, Mass.)—Bridgewater, Brockton, Fall River, Hyannis, New Bedford, Taunton, Mass.

**Southwestern Telegraph & Telephone Co.** (Little Rock, Ark.)—Fort Smith, Helena, Hot Springs, Little Rock, Texarkana, Ark.; Austin, Brenham, Cleburne, Corpus Christi, Corsicana, Dallas, Denison, El Paso, Fort Worth, Gainesville, Galveston, Houston, Marshall, Palestine, Paris, San Antonio, Sherman, Tyler, Waco, Waxahatchie, Texas.

**W. S. Nevada, Mo.**—Nevada, Mo.

**Suburban Telephone Co.** (Boston, Mass.)—Brookline, Cambridge, Charlestown, Chelsea, Dorchester, East Boston, Hyde Park, Jamaica Plain, Malden, Medford, Milton, Newton, Quincy, Somerville, Waltham, Woburn, Mass.

**Sullivan Telephone Exchange Co.** (Sullivan, Ind.)—Sullivan, Ind.

**Telephone & Telegraph Construction Co.** (Detroit, Mich.)—Adrian, Alpena, Ann Arbor, Battle Creek, Big Rapids, Calumet, Cadillac, Charlotte, Cheboygan, Coldwater, Detroit, East Saginaw, Bay City, Saginaw City, Flint, Grand Haven, Grand Rapids, Greenville, Hancock, Hesperia, Hillsdale, Holly, Houghton, Howell, Hudson, Ionia, Ishpeming, Jackson, Kalamazoo, Lansing, Lapeer, Ludington, Manchester, Marquette, Menominee, Midland, Monroe, Montague, Whitehall, Mt. Clemens, Muskegon, Negaunee, Newaygo, Niles, Pontiac, Port Huron, Richmond, Romeo, St. Clair, Stanton, St. Joseph, Ben Harbor, Tecumseh, Three Rivers, Ypsilanti, Mich.

**Telephone Exchange Co.** (Baltimore, Md.)—Baltimore, Cumberland, Frederick, Hagerstown, Md.

**Utah Telephone Co.** (Salt Lake City, Utah.)—Salt Lake City, Utah.

**Valley City Telephone Exchange Co.** (Valley City, Dak.)—Valley City, Dak.

**Western Telephone Co.** (Chicago, Ill.)—La Salle, Ottawa, Quincy, Rockford, Rock Island, Moline, Ill.; Davenport, Iowa; Indianapolis, Kokomo, La Fayette, Loganport, Marion, Michigan City, Peru, South Bend, Ind.; Cedar Rapids, Des Moines, Dubuque, Keokuk, Ottumwa, Iowa.

**Waukesha Bell Telephone Co.** (Laconia, N.H.)—Laconia, N.H.

**Water Bros.** (Kingston, N.Y.)—Kingston, Rondout, N.Y.

**Wisconsin Telephone Co.** (Milwaukee, Wis.)—Appleton, Beloit, Berlin, Chippewa Falls, Eau Claire, Delavan, Fond du Lac, Green Bay, Janesville, La Crosse, Madison, Manitowish, Marinette, Merrill, Milwaukee, Menasha, Neenah, Oconto, Oshkosh, Racine, Sheboygan, Stevens Point, Waukesha, Wausau, White Water, Wis.

**Wyoming Telephone & Telegraph Co.** (Cheyenne, Wyoming Territory.)—Cheyenne, Laramie City, Wyo. Ter.

**Telephone Dispatch Company** (Boston, Mass.)—Boston, Mass.

## L I C E N S E E S

### FOR THE SUPPLY OF TELEPHONES FOR PRIVATE LINES AND OTHER PURPOSES.

**Beach & Root, Lyons, Iowa.** Bay State Telephone Co., Lowell, Mass. Beach & Hunt, West Winsted, Conn. Bell Telephone Co. of Buffalo, Buffalo, N.Y. Bell Telephone Co. of Missouri, St. Louis, Mo. Bell Telephone Co. of New Mexico, Las Vegas, New Mex. Bell Telephone Co. of Philadelphia, Philadelphia, Penn. Boston & Northern Telephone Co., Lowell, Mass. Brattleboro' Telephone Exchange, Brattleboro' Vt. Brower, H. C. & Son, Syracuse, N.Y. Brown, A. C., Montpelier, Vt. Buckeye Telephone Co., Middletown, Ohio. Burlington Telephone Co., Burlington, Iowa.

**Central District & Printing Telegraph Co., Pittsburg, Penn.** Central New York Telephone & Telegraph Co., Utica, N.Y. Central Pennsylvania Telephone & Supply Co., Williamsport, Penn. Central Telephone Co., Chicago, Ill. Cheshire County Telephone Co., Keene, N.H. Chicago Telephone Co., Chicago, Ill. City & Suburban Telegraph Association, Cincinnati, Ohio. Clapp, Clement L., Carrollton, Ill. Cleveland Telephone Co., Cleveland, Ohio. Colorado Telephone Co., Denver, Col. Commercial Telephone Co. of Albany, Albany, N.Y. Commercial Telephone Company of Troy, Troy, N.Y. Connecticut Telephone Co., New Haven, Conn. Cozens & Bull, Newport, R.I. Cumberland Telephone & Telegraph Co., Nashville, Tenn.

**Danbury Telephone Dispatch Co., Danbury, Conn.** Danville Telephone Co., Danville, Ind.

**Empire Telephone Co., New York, N.Y.** Empire State Telephone & Telegraph Co., Auburn, N.Y. Engle, George B., Jr., & Co., Cedar Rapids, Iowa.

**Freeport Telephone Exchange Co., Freeport, Ill.**

**Glenwood Telephone Exchange Co., Glenwood, Iowa.** Gold & Stock Telegraph Co., New York, N.Y. Granite State Telephone Co., Manchester, N.H.

**Hickok, J. S., Vergennes, Vt.** Hudson River Telephone & Telegraph Co., New York, N.Y.

**Ingham, Glidden & Downs, Lowell, Mass.** Iowa & Minnesota Telephone Co., Dubuque, Iowa. Iowa Telephone & Telegraph Co., Davenport, Iowa.

**Joplin Telephone Co., Joplin, Mo.**

**Kansas Telephone Co., New Orleans, La.**

**Kansas Telephone & Telegraph Co. of Kansas & Missouri, Kansas City, Mo.** Metropolitan Telephone & Telegraph Co., New York, N.Y. Midland Telephone Co., Chicago, Ill. Missouri & Kansas Telephone Co., Kansas City, Mo.

**National Bell Telephone Co. of the State of Me., Lowell, Mass.** National Capital Telephone Co., Washington, D.C.

**Nebraska Telephone Co., Omaha, Neb.** New York & Pennsylvania Telephone & Telegraph Co., New York, N.Y.

**North Pennsylvania Telephone Co., Scranton, Penn.** Northwestern Telephone Exchange Co., Minneapolis, Minn.

**Ohio Valley Telephone Co., Louisville, Ky.**



Pacific Bell Telephone Co., San Francisco, Cal. Peekskill Telephone Co., Peekskill, N.Y. Pennsylvania Telephone Co., Harrisburg, Penn. Post & Co., Cincinnati Ohio. Providence Telephone Co., Providence, R.I. Red Oak Telephone Co., Red Oak, Iowa. Rolfe, H. P., Fort Benton, Montana. Southeastern Dakota Telephone & Telegraph Co., Yankton, Dak. Southern Bell Telephone & Telegraph Co., New York, N.Y. Southern Massachusetts, Telephone Co., New Bedford, Mass. Southwestern Telegraph & Telephone Co., Little Rock, Ark. Storke, H. L., New York, N.Y. Suburban Telephone Co., Boston, Mass. Sullivan Telephone Co., Sullivan, Ind. Telephone & Telegraph Construction Co., Detroit, Mich. Telephone Exchange Co., Baltimore, Md. Utah Telephone Co., Salt Lake City, Utah. Western Telephone Co., Chicago, Ill. Wilmont, W. H., Lambertville, N.J. Winter Brothers, Kingston, N.Y. Wisconsin Telephone Co., Milwaukee, Wis. Wyoming Telephone & Telegraph Co., Cheyenne, Wyo. Ter.

Balch & Root (Lyons, Iowa).—Clinton, Iowa, to Morrison, Ill.; Clinton, Iowa, to Mt. Carroll, Ill.; Clinton, Iowa, to DeWitt, Ia.; to Davenport, Ia.; to Morrison, Ill.; to Mount Carroll, Ill.; to Morrison, Ill.; to Mt. Carroll, Ill.; to Polo, Ill. Bay State Telephone Co. (Lowell, Mass.).—Ayer, Mass., to Boston, Mass.; Mass., to Springfield, Mass.; Fitchburg, Mass., to Gardner, Mass.; Holyoke, Mass., to Northampton, Mass.; Northampton, Mass., to Fitchburg, Mass.; Gardner, Mass.; Fitchburg, Mass.; to Northampton, Mass.; to Fitchburg, Mass.; to Worcester, Mass.; Southbridge, Mass., to Worcester, Mass.; So. Framingham, Mass., to Framingham, Mass.; So. Framingham, Mass., to East Douglas, Mass.; So. Framingham, Mass., to Lowell, Mass.; Buffalo, Mass., to Westfield, Mass.; Worcester, Mass., to Lowell, Mass. Bell Telephone Co. of Buffalo, N.Y.; Buffalo, N.Y., to Akron, N.Y.; Buffalo, N.Y., to Lockport, N.Y.; Buffalo, N.Y., to Niagara Falls, N.Y.; Buffalo, N.Y., to Rochester, N.Y.; Lockport, N.Y., to Rochester, N.Y.; Rochester, N.Y., to Danville, N.Y.; Rochester, N.Y., to Geneseo, N.Y. Bell Telephone Co. of Missouri (St. Louis, Mo.).—St. Louis, Mo., to Alton, Mo., to Belleville, Ill.; St. Louis, Mo., to St. Charles, Mo.; St. Louis, Mo., to Alton, Ill.; to Collinsville, Ill.; St. Louis, Mo., to Belleville, Ill.; St. Louis, Mo., to Highland, Ill. Boston & Northern Telephone Co. (Lowell, Mass.).—Boston, Mass., to Salem, Mass.; Salem, Mass., to Gloucester, Mass.; Salem, Mass., to Lawrence, Mass.; Salem, Mass., to Haverhill, Mass.; Salem, Mass., to Portsmouth, N.H.; Lawrence, Mass., to Lowell, Mass.; Salem, Mass., to Nashua, N.H.; Lawrence, Mass., to Concord, N.H.; Lawrence, Mass., to Haverhill, Mass.; Salem, Mass., to Nashua, N.H.; Haverhill, Mass., to Rochester, N.H.; Haverhill, Mass., to Exeter, N.H.; Exbury, Mass., to Haverhill, Mass.; Exbury, N.H., to Great Falls, N.H.; Exeter, N.H., to Portsmouth, N.H.; Exeter, N.H., to North Hampton, N.H.; Exeter, N.H., to Newburyport, Mass.; Nashua, N.H.; Exbury, N.H.; Buckeye Telephone Co. (Middletown, Ohio).—Lebanon, Ohio, to Cincinnati, Ohio; Lebanon, Ohio, to Middletown, Ohio, to Hamilton, Ohio; Middletown, Ohio, to Lebanon, Ohio; Xenia, Ohio, to Dayton, Ohio.

Central District & Printing Telegraph Co. (Pittsburg, Penn.).—Meadville, Penn., to Titusville, Penn.; Warren, Penn., to Girard, Ohio. Central New York Telephone & Telegraph Co. (Utica, N.Y.).—Oneida, N.Y., to Syracuse, N.Y. Central Pennsylvania Telephone & Supply Co. (Williamsport, Penn.).—Altoona, Penn., to Huntingdon, Penn.; Altoona, Penn., to Wilkesbarre, Penn.; Philadelphia, Penn., to Altoona, Penn.; Philadelphia, Penn., to Williamsport, Penn.; Shomokin, Penn., to Pottsville, Penn.; Williamsport, Penn., to Lock Haven, Penn.; Williamsport, Penn., to Milton, Penn. Central Telephone Co. (Chicago, Ill.).—Alton, Ill., to St. Louis, Mo., via Collinsville, Ill.; Alton, Ill., to St. Louis, Mo., via Mitchell, Ill.; Anderson, Ind., to Indianapolis, Ind.; Anderson, Ind., to Ind.; Anderson, Ind., to Noblesville, Ind.; Belvidere, Ill., to Garden Prairie, Ill.; Belvidere, Ill., to Rockford, Ill.; Bloomington, Ill., to Champaign, Ill.; Bloomington, Ill., to Clinton, Ill.; Bloomington, Ill., to Gibson City, Ill.; Bloomington, Ill., to Lincoln, Ill.; Bloomington, Ill., to Pontiac, Ill.; Bloomington, Ill., to Peoria, Ill.; Canton, Ill., to Eaton, Ohio; Cambridge City, Ind., to Rushville, Ind.; Canton, Ill., to Macomb, Ill.; Canton, Ill., to Peoria, Ill.; Carthage, Ill., to Keokuk, Ia.; Centralia, Ill., to Mt. Vernon, Ill.; Centralia, Ill., to Nashville, Ind.; Columbus, Ind., to Seymour, Ind.; Columbus, Ind., to Shelbyville, Ind.; Connersville, Ind., to Cambridge City, Ind.; Crawfordsville, Ind., to Lebanon, Ind.; Danville, Ill., to Hoopeson, Ill.; Danville, Ill., to Paris, Ill.; Decatur, Ill., to Clinton, Ill.; Decatur, Ill., to Hammond, Ill.; Delavan, Ill., to Mason City, Ill.; Delphi, Ind., to La Porte, Ind.; Delphi, Ind., to Logansport, Ind.; Dixon, Ill., to Morrison, Ill.; Fowler, Ind., to La Fayette, Ind.; Fort, Ind., to Kokomo, Ind.; Frankfort, Ind., to La Fayette, Ind.; Franklin, Ind., to Indianapolis, Ind.; Ind., to Columbus, Ind.; Frankfort, Ind., to Lebanon, Ind.; Galena, Ill., to Dubuque, Ia.; Galesburg, Monmouth, Ill.; Galesburg, Ill., to Peoria, Ill.; Geneseo, Ill., to Davenport, Ia.; Geneseo, Ill., to Greenacastle, Ind., to Indianapolis, Ind.; Greenacastle, Ind., to Terre Haute, Ind.; Hartford City, Ind., to Ind.; Hartford City, Ind., to Marion, Ind.; Hartford City, Ind., to Portland, Ind.; Hartford City, Ind., to City, Ind.; Highland, Ill., to St. Louis, Mo.; Jacksonville, Ill., to Winchester, Ill.; Kankakee, Ill., to La Porte, Ind.; to Michigan City, Ind.; La Porte, Ind., to South Bend, Ind.; Lebanon, Ind., to Indianapolis, Ind.; Lincoln, Ill., to Decatur, Ill.; Lincoln, Ill., to Peoria, Ill.; Marshall, Ill., to Terre Haute, Ind.; Martineau, Ind., to Franklin, Ind.; Martinsville, Ind., to Indianapolis, Ind.; Matteson, Ill., to Champaign, Ill.; Matteson, Paris, Ill.; Mendota, Ill., to La Salle, Ill.; Mendota, Ill., to Princeton, Ill.; Monticello, Ind., to Logansport, Mt. Sterling, Ill., to Quincy, Ill.; Muncie, Ind., to Anderson, Ind.; Newcastle, Ind., to Anderson, Ind.; Ind., to Cambridge City, Ind.; Noblesville, Ind., to Indianapolis, Ind.; via Castleton, Noblesville, Ind.; Peoria, Ill., via Nora; Noblesville, Ind., to Kokomo, Ind.; Paris, Ill., to Terre Haute, Ind.; Peoria, Ill., to Peoria, Ill.; Peoria, Ill., to Havana, Ill.; Peoria, Ill., to Lacon, Ill.; Peoria, Ill., to Toulon, Ill.; Petersburg, Beardstown, Ill.; Polo, Ill., to Dixon, Ill.; Polo, Ill., to Mt. Carroll, Ill.; Polo, Ill., to Rockford, Ill.; Polo, Ill., to Joliet, Ill.; Princeton, Ill., to La Salle, Ill.; Richmond, Ind., to Greenvale, Ohio; Richmond, Ind., to Ind.; Rushville, Ind., to Hamilton, Ohio; Rushville, Ind., to Indianapolis, Ind.; Rushville, Ind., to Ind.; Sandusky, Ohio, to Fremont, Ohio; Sandusky, Ohio, to Norwalk, Ohio; Springfield, Ill., to Beardstown, Springfield, Ill., to Decatur, Ill.; Springfield, Ill., to Jacksonville, Ill.; Springfield, Ill., to Lincoln, Ill.; Springfield, Ill., to Petersburg, Ill.; Springfield, Ill., to Taylorville, Ill.; Streator, Ill., to Ottawa, Ill.; Streator, Pontiac, Ill.; Terre Haute, Ind., to Sullivan, Ind. Chicago Telephone Co. (Chicago, Ill.).—Chicago, Ill., to Waukegan, Wis.; Elgin, Ill., to Garden Prairie, Ill.; Joliet, Ill., to Pontiac, Ill.; Geneva Lake, Wis., to Chicago City & Suburban Telegraph Association (Cincinnati, Ohio).—Cincinnati, Ohio, to Dayton, Ohio; Cincinnati, Georgetown, Ohio; Cincinnati, Ohio, to Hillsborough, Ohio; Cincinnati, Ohio, to Lebanon, Ohio; Cincinnati, Ohio, to Hamilton, Ohio; Hamilton, Ohio, to Rushville, Ind. Cleveland Telephone Co. (Cleveland, Ohio).—Cleveland, Painesville, Ohio. Colorado Telephone Co. (Denver, Col.).—Denver, Col., to Central City, Col.; Denver, Boulder, Col.; Gunnison City, Col.; to Crested Butte, Col. Connecticut Telephone Co. (New Haven, Conn.).—New Haven, Conn., to Derby, Conn.; Meriden, Conn., to Middletown, Conn.; New London, Conn., to Norwich, Cozens & Bull (Newport, R.I.).—Newport, R.I., to Fall River, Mass. Cumberland Telephone & Telegraph (Roanoke, Tenn.).—Carmi, Ill., to Harrisburg, Ill.; Caseyville, Ky., to Dycusburgh, Ky.; Evansville, Nashville, Ind.; Evansville, Ind., to Madisonville, Ky.; Evansville, Ind., to Mount Vernon, Ind.; Evansville, Ind., to Owensboro, Ky.; Evansville, Ind., to Poseyville, Ind.; Evansville, Ind., to Princeton, Ind.; Evansville, Rockport, Ind.; Evansville, Ind., to Vincennes, Ind.; Gallatin, Tenn., to Bowling Green, Ky.; Gallatin, Dixon Springs, Tenn.; Henderson, Ky., to Uniontown, Ky.; Jackson, Tenn., to Lexington, Tenn.; Lebanon, to Alexandria, Tenn.; Lebanon, Tenn., to Carthage, Tenn.; Madisonville, Ky., to Hopkinsville, Ky.; Mt. Vernon, Ind., to Carmi, Ill.; Mt. Vernon, Ind., to Shawneetown, Ill.; Mt. Vernon, Ind., to Uniontown, Ky.; Mt. Vernon, Tenn., to Shelbyville, Tenn.; Nashville, Tenn., to Columbia, Tenn.; Nashville, Tenn., to Gallatin, Nashville, Tenn., to Hopkinsville, Ky.; Nashville, Tenn., to Lebanon, Tenn.; Nashville, Tenn., to Newburgh, Tenn.; Nashville, Tenn., to Springfield, Tenn.; Princeton, Ind., to Petersburg, Ind.; Princeton, Poseyville, Ind.; Rockport, Ind., to Tell City, Ind.; Uniontown, Ky., to Caseyville, Ky.

Empire State Telephone & Telegraph Co. (Auburn, N.Y.).—Auburn, N.Y., to Syracuse, N.Y.; Fulton, N.Y., to N.Y.; Oswego, N.Y., to Fulton, N.Y.

Freeport Telephone Exchange Co. (Freeport, Ill.).—Freeport, Ill., to Rockford, Ill.



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rd, R. G., 2d, (Peacedale, R.I.)—South Kingston, R.I., to Providence, R.I. Hudson River Telephone & Telegraph Co. (New York City, N.Y.)—Poughkeepsie, Fishkill & Newburgh, N.Y.

State Telephone Co. (Providence, R.I.)—Boston, Mass., to Providence, R.I. Iowa & Minnesota Telephone Co. (Dubuque, Iowa.)—Le Mars, Iowa, to Sioux City, Iowa; Manchester, Ia., to Dubuque, Ia.; Marshalltown, Ia., to Montezuma, Ia. Iowa Telephone & Telegraph Co. (Davenport, Iowa.)—Anamosa, Ia., to Cedar Rapids, Ia.; Fort Dodge, Ia., to Dakota, Ia.; Independence, Ia., to Waterloo, Ia.; Independence, Ia., to Cedar Rapids, Ia.; Indianola, Ia., to Des Moines, Ia.; Iowa City, Ia., to Davenport, Ia.; Montezuma, Ia., to Marshalltown, Ia.; Muscatine, Ia., to Davenport, Ia.; Newton, Ia., to Des Moines, Ia.; Oskaloosa, Ia., to Indianola, Ia.; Vinton, Ia., to Cedar Rapids, Ia.; Winterset, Ia., to Des Moines, Ia.

San County Bell Telephone Co. (Maquoketa, Iowa.)—Maquoketa, Iowa, to Bellevue, Iowa; Maquoketa, Iowa, to Sabula, Iowa. Johnson, Lenson (Vincennes, Ind.)—Greenburgh, Ind., to Shelbyville, Ind.; Seymour, Ind., to Columbus, Ind.; Shelbyville, Ind., to Columbus, Ind.; Shelbyville, Ind., to Indianapolis, Ind.; Vincennes, Ind., to Bloomfield, Ind.; Vincennes, Ind., to Evansville, Ind.; Vincennes, Ind., to Olney, Ill.; Vincennes, Ind., to Washington, Ind.; Washington, Ind., to Petersburg, Ind.

ville Telephone Co. (Leadville, Col.)—Denver, Col., to Leadville, Col. Louisiana Telephone Co. (New Orleans, La.)—Port Hudson, La., to Woodville, Miss.

Miss Telephone & Electric Co. (Memphis, Tenn.)—Memphis, Tenn., to Holly Springs, Miss.; Memphis, Tenn., to Friar's Point, Miss. Merchant's Telephone & Telegraph Co. of Kansas & Missouri Kansas City, Mo.: Kansas City, Mo., to Leavenworth, Kan. Michigan Bell Telephone Co. (Detroit, Mich.)—Adrian, Mich., to Hillsdale, Mich.; Adrian, Mich., to Toledo, Mich.; Ann Arbor, Mich., to Howell, Mich.; Ann Arbor, Mich., to Manchester, Mich.; Ann Arbor, Mich., to Milan, Mich.; Battle Creek, Mich., to Kalamazoo, Mich.; Detroit, Mich., to Port Huron, Mich.; Detroit, Mich., to Adrian, Mich.; Detroit, Mich., to Ann Arbor, Mich.; Detroit, Mich., to Toledo, Mich.; Detroit, Mich., to Flint, Mich.; Detroit, Mich., to Jackson, Mich.; Detroit, Mich., to Lansing, Mich.; Detroit, Mich., to Pontiac, Mich.; Detroit, Mich., to Port Huron, Mich.; Detroit, Mich., to St. Clair, Mich.; East Saginaw, Mich., to Caro, Mich.; East Saginaw, Mich., to Midland, Mich.; Flint, Mich., to East Saginaw, Mich.; Grand Rapids, Mich., to Holland, Mich.; Grand Rapids, Mich., to Howard City, Mich.; Grand Rapids, Mich., to Ionia, Mich.; Grand Rapids, Mich., to Montague, Mich.; Grand Rapids, Mich., to Muskegon, Mich.; Grand Rapids, Mich., to Newaygo, Mich.; Hilldale, Mich., to Coldwater, Mich.; Ionia, Mich., to Carson City, Mich.; Ionia, Mich., to Stanton, Mich.; Jackson, Mich., to Battle Creek, Mich.; Jackson, Mich., to Charlotte, Mich.; Jackson, Mich., to Lansing, Mich.; Kalamazoo, Mich., to Allegan, Mich.; Kalamazoo, Mich., to Paw Paw, Mich.; Kalamazoo, Mich., to Three Rivers, Mich.; Lansing, Mich., to Ionia, Mich.; Lapeer, Mich., to Flint, Mich.; Montague, Mich., to Hart, Mich.; Muskegon, Mich., to Montague, Mich.; Muskegon, Mich., to Newaygo, Mich.; Mt. Clemens, Mich., to Lapeer, Mich.; Newaygo, Mich., to Big Rapids, Mich.; Newaygo, Mich., to Hesperia, Mich.; Niles, Mich., to South Bend, Ind.; Pontiac, Mich., to Lapeer, Mich.; Pontiac, Mich., to Milford, Mich.; Port Huron, Mich., to Lapeer, Mich.; Port Huron, Mich., to Sandusky, Mich.; Port Huron, Mich., to Mt. Clemens, Mich.; St. Clair, Mich., to Mt. Clemens, Mich.; St. Joseph, Mich., to Niles, Mich.; Midland Telephone Co. (Chicago, Ill.)—Akron, Ohio, to Canton, Ohio; Akron, Ohio, to Cleveland, Ohio; Alliance, Ohio, to Canton, Ohio; Ashtabula, Ohio, to Painesville, Ohio; Bellefontaine, Ohio, to Kenton, Ohio; Bellefontaine, Ohio, to Sidney, Ohio; Bluffton, Ind., to Decatur, Ind.; Bluffton, Ind., to Hartford City, Ind.; Bellefontaine, Ohio, to Urbana, Ohio; Chillicothe, Ohio, to Circleville, Ohio; Columbus, Ohio, to Circleville, Ohio; Columbus, Ohio, to Delaware, Ohio; Columbus, Ohio, to Lancaster, Ohio; Columbus, Ohio, to Marysville, Ohio; Columbus, Ohio, to Newark, Ohio; Columbus, Ohio, to Sunbury, Ohio; Dayton, Ohio, to Eaton, Ohio; Dayton, Ohio, to Cincinnati, Ohio; Dayton, Ohio, to Greenville, Ohio; Dayton, Ohio, to Springfield, Ohio; Dayton, Ohio, to Xenia, Ohio; Eaton, Ohio, to Hamilton, Ohio; Elkhart, Ind., to South Bend, Ind.; Fort Wayne, Ind., to Bluffton, Ind.; Fort Wayne, Ind., to Warsaw, Ind.; Fremont, Ohio, to Sandusky, Ohio; Gallion, Ohio, to Bucyrus, Ohio; Gallipolis, Ohio, to Pomeroy, Ohio; Georgetown, Ohio, to Cincinnati, Ohio; Greenville, Ohio, to Richmond, Ind.; Hillsborough, Ohio, to Bainsbridge, Ohio; Hillsborough, Ohio, to Cincinnati, Ohio; Huntington, Ind., to Fort Wayne, Ind.; Kenton, Ohio, to Lima, Ohio; Lima, Ohio, to Middletown, Ohio; Lima, Ohio, to Van Wert, Ohio; Mansfield, Ohio, to Ashland, Ohio; Mansfield, Ohio, to Gallion, Ohio; Mansfield, Ohio, to Norwalk, Ohio; Mount Vernon, Ohio, to Mansfield, Ohio; Norwalk, Ohio, to Fremont, Ohio; Norwalk, Ohio, to Sandusky, Ohio; Oberlin, Ohio, to Cleveland, Ohio; Painesville, Ohio, to Cleveland, Ohio; Piqua, Ohio, to Greenville, Ohio; Port Clinton, Ohio, to Fremont, Ohio; Portland, Ind., to Hartford City, Ind.; Portland, Ind., to Winchester, Ind.; Portsmouth, Ohio, to Ironton, Ohio; Ravenna, Ohio, to Akron, Ohio; Ravenna, Ohio, to Cleveland, Ohio; Springfield, Ohio, to Columbus, Ohio; Springfield, Ohio, to Dayton, Ohio; Springfield, Ohio, to Urbana, Ohio; Tiffin, Ohio, to Fremont, Ohio; Toledo, Ohio, to Adrian, Mich.; Toledo, Ohio, to Bowling Green, Ohio; Toledo, Ohio, to Detroit, Mich.; Toledo, Ohio, to Fremont, Ohio; Union City, Ind., to Greenville, Ohio; Union City, Ind., to Hartford City, Ind.; Urbana, Ohio, to Piqua, Ohio; Wabash, Ind., to Huntington, Ind.; Wabash, Ind., to Marion, Ind.; Wabash, Ind., to Peru, Ind.; Wabash, Ind., to North Manchester, Ind.; Warren, Ind., to Marion, Ind.; Warsaw, Ind., to No. Manchester, Ind.; Warsaw, Ind., to Plymouth, Ind.; Washington, C. H., Ohio, to Circleville, Ohio; Washington C. H., Ohio, to Wilmington, Ohio; Wilmington, Ohio, to Hillsborough, Ohio; Winchester, Ind., to Union City, Ind.; Wooster, Ohio, to Ashland, Ohio; Wooster, Ohio, to Massillon, Ohio; Youngstown, Ohio, to Girard, Ohio; Youngstown, Ohio, to Ravenna, Ohio; Youngstown, Ohio, to Sharon, Penn. Missouri & Kansas Telephone Co. (Kansas City, Mo.)—Canton, Mo., to Monticello, Mo.; Canton, Mo., to Quincy, Ill.; Hannibal, Mo., to Quincy, Ill.; St. Joseph, Mo., to Atchison, Kan. Montana Telephone & Telegraph Co. (Ogden City, Utah.)—Helena, Mont., to Butte City, Mont.

al Bell Telephone Co. of the State of Me. (Lowell, Mass.)—Bath Me., to Lewiston, Me.; Portland, Me., to Lewiston, Me.; Portland, Me., to Portsmouth, N.H.; Portland, Me., to Skowhegan, Me. National Capital Telephone Co. (Washington, D.C.)—Washington, D.C., to Laurel, Md. Nebraska Telephone Co. (Omaha, Neb.)—Fremont, Neb., to Columbus, Neb.; Lincoln, Neb., to Crete, Neb.; Omaha, Neb., to Blair, Neb.; Omaha, Neb., to Fremont, Neb.; Omaha, Neb., to Plattsmouth, Neb.; Omaha, Neb., to Seward, Neb.; St. Paul, Neb., to Grand Island, Neb. New York & Pennsylvania Telephone & Telegraph Co. (New York, N.Y.)—Bath, N.Y., to Hornellsville, N.Y.; Bradford, Penn., to Richburgh, N.Y.; Mayville, N.Y., to Jamestown, N.Y. North Pennsylvania Telephone Co. (Scranton, Penn.)—Wilkesbarre, Penn., to Bloomsburg, Penn. North Western Telephone Exchange Co. (Minneapolis, Minn.)—Minneapolis, Minn., to Minnetrista, Minn.; St. Paul, Minn., to Stillwater, Minn.; St. Paul, Minn., to Winona, Minn.

Telephone Exchange Co. (Ogden City, U.T.)—Ogden City, U.T., to Salt Lake City, U.T. Ohio Valley Telephone Co. (Louisville, Ky.)—Louisville, Ky., to Shelbyville, Ky.; New Albany, Ind., to Leavenworth, Ind.; Shelbyville, Ky., to Frankfort, Ky.

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Telephone Co. (Salt Lake City, U.T.)—Salt Lake City, U.T., to Ogden City, U.T.

sa Telephone Co. (Chicago, Ill.)—Cedar Rapids, Ia., to Anamosa, Ia.; Cedar Rapids, Ia., to Independence, Ia.; Cedar Rapids, Ia., to Vinton, Ia.; Davenport, Ia., to De Witt, Ia.; Davenport, Ia., to Dixon, Ia.; Davenport, Ia., to Geneseo, Ill.; Davenport, Ia., to Iowa City, Ia.; Davenport, Ia., to Muscatine, Ia.; Des Moines, Ia., to Indianola, Ia.; Des Moines, Ia., to Newton, Ia.; Des Moines, Ia., to Winterset, Ia.; Dubuque, Ia., to Cascade, Ia.; Dubuque, Ia., to Galena, Ill.; Dubuque, Ia., to Manchester, Ia.; Dubuque, Ia., to Platteville, Wis.; Indianapolis, Ind., to Anderson, Ind.; Indianapolis, Ind., to Franklin, Ind.; Indianapolis, Ind., to Greencastle, Ind.; Indianapolis, Ind., to Lebanon, Ind.; Indianapolis, Ind., to Martinsville, Ind.; Indianapolis, Ind., to Noblesville, Ind., via Castleton; Indianapolis, Ind., to Noblesville, Ind., via Noria; Indianapolis, Ind., to Rushville, Ind.; Indianapolis, Ind., to Shelbyville, Ind., Keokuk, Ia., to Carthage, Ill.; Kokomo, Ind., to Frankfort, Ind.; Kokomo, Ind., to Noblesville,

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**ERICAN TELEGRAPH AND CABLE COMPANY OF NEW YORK, U.S.A., 213, Gresham House, Old Broad-street, E.C., 195, Broadway, New York City.** Capital, \$20,000,000. General THOS. T. ECKERT, President; D. H. BATES, Vice-President and Secretary; G. S. MORISINI, Treasurer; THOS. F. CLARK, Secretary. Directors: Jay Gould, Fred. S. Ames, D. H. Bates, Genl. G. M. Dodge, Genl. Thos. T. Eckert. Cables number two Atlantic Cables from Cornwall to Nova Scotia. Tariff, two shillings (or 50c.) per word. This Company is posted with other Members of Consolidation, and receives 22½ per cent.

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**CONSTITUTION.**—Whereas, the telegraph has come to be a very important factor in the successful operation of a railroad, and no railroad enterprise of the least pretensions considers itself thoroughly equipped for business without a line of telegraph. From its occasional use in the early history of both, it has grown upon most roads into a separate department of the service, and is used in the transaction of the business of the roads with great freedom, and charged with duties of the greatest responsibility. Therefore, for the purpose of better enabling us to perform the duties devolving upon us, and for a more effective service, and an exchange of views relating to matters which effect the working of the railway telegraph service upon the roads represented by us as telegraph superintendents, we hereby form ourselves into an association, styled **THE ASSOCIATION OF RAILROAD TELEGRAPH SUPERINTENDENTS.** The Association shall meet annually, at Chicago, or at such place as may be designated at each annual meeting, or oftener, upon call of the President, who shall designate the place for holding such called meeting, to discuss whatever matters may be brought before it, having relation to railroad telegraphy. Anyone connected with the telegraph department of any railroad, in the capacity of Superintendent, Assistant Superintendent, Chief Train Dispatcher or Division Operator, may become a member of this Association, by subscribing hereto, and paying into the treasury three dollars per annum; provided, however, that no railroad organization be entitled to more than one vote. Business may be transacted at any meeting, five members constituting a quorum. The officers of this Association shall be a President, a Vice-President, a Secretary and a Treasurer; the last two offices may be filled by one person. The officers shall be elected by ballot, and shall hold their offices one year, or until their successors are chosen. The officers of this Association shall constitute an Executive Committee. In case of a vacancy in any office, it may be filled for the remainder of the year by the Executive Committee. The duties of the officers shall be such as pertain to those offices. The Treasurer shall pay out money only upon the order of the Executive Committee. The annual meetings of the Association shall be held on the third Wednesday of May. Matters of interest may be introduced at any time, and the utmost freedom of discussion is invited. Upon invitation of the President, any one prominently connected with railway or telegraph interests, may be present at the meetings of the Association.

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**WIRE AND STOCK TELEGRAPH COMPANY,** 61 and 195 Broadway, 185 Fifth-avenue, and 8, Dey-street, collects and distributes Commercial News, Market Quotations, &c., to all parts of the United States and Canada. NORVIN GREEN, President. Technical and Engineering Department.—GEORGE B. SCOTT, Superintendent; CHAS. S. H. SMALL, Assistant Superintendent; ARTHUR V. WALDRON, Chief Operator; D. BRYCE SCOTT, Chief Inspector; GEO. E. SCOTT, Chief of Construction; MICHAEL BRESLIN, Chief Batteryman. Commercial News Department.—EDWIN F. LUDWIG, Superintendent; D. L. LUDWIG, Assistant Superintendent; J. H. TOWNSEND, Manager; GEO. M. SCHUSTER, Chief of the Operating Department.

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**INTER-CONTINENTAL TELEPHONE COMPANY.** Capital, \$200,000. 20 shares, \$10 each. Shares fully paid and unassessable. Organized under the laws of State of N.J. The principal Office of the Company is at 95, Milk-street, Boston. Officers—HENRY S. RUSSELL, President; CHAS. WILLIAMS, JR., Vice-President; JAS. HOWARD, Secretary and Treasurer. Correspondence is solicited and exclusive territory secured upon reasonable terms. Experienced Telephone men are wanted.

**INTERNATIONAL OCEAN TELEGRAPH COMPANY,** Western Union Building, 195, Broadway, New York City. Capital, \$3,000,000. NORVIN GREEN, President; T. T. ECKERT, Vice-President; CHARLES F. ESTEE, Secretary; R. H. ROCHESTER, Treasurer; G. B. VAN EVERY, Auditor. Directors—Norvin Green, Augustus Schell, Harrison D. Robert C. Livingston, Jay Gould, Thomas T. Eckert, George G. Gould, John Van H. Russell Sage. Land Lines, from Lake City, Florida, to Punta Rassa, Florida; two Submarine Cables from Punta Rassa, Florida, to Key West, Florida; two Submarine Cables from West, Florida, to Havana, Cuba. Tariff, 50 cents per word, New York to Havana. 10 letter limit does not apply on these lines.

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**IOWA TELEPHONE AND TELEGRAPH COMPANY,** General Office, Davenport, Iowa. JAMES THOMPSON, President; W. H. DECKER, Vice-President; N. FR. HALL, Secretary; E. S. CARL, Treasurer; W. A. LEAHY, General Manager. Executive Committee—F. H. Griggs, W. H. Decker and Jas. Thompson.

**IRON TELEGRAPH POLE AND POST COMPANY,** Temple-court, New York. F. M. DELANO, President; G. W. BLANCHARD, Secretary and Treasurer.

**LOUISIANA TELEPHONE COMPANY,** Louisiana and Mississippi. Executive Office, 47, Camp-street, New Orleans. JOHN N. BOFINGER, President; W. BOFINGER, Vice-President and General Manager; W. W. HUCK, Secretary and Treasurer. New Orleans, La.

**MACKAY-BENNETT CABLES.** "THE COMMERCIAL CABLE COMPANY." The Capital Stock of this Association shall be \$4,000,000, divided into 40,000 shares of the value of \$100 each, with power to increase said capital stock from time to time, and by amounts as may be necessary to represent the cost of building and constructing the telegraph, including submarine cables, and the purchase of property of every kind now or useful in connection with the business for which this Association is formed. The proposed route includes cables and land lines in North and South America, and connects cables and land lines to Europe across the Atlantic, and to Japan and China from San Francisco across the Pacific Ocean with intermediate stations at all desirable points. The names and places of residence of the shareholders of this Association, and the number of shares held by each respectively are as follows:—John W. MacKay, Virginia, Nev., 20,000; Isaac Bell, Newport, R.I., 10,000; Hector de Castro, New York City, 5,000; David B. Davis, Brooklyn, N.Y., 5,000.

**MANHATTAN DISTRICT TELEGRAPH COMPANY.** Executive Offices, Nos. 37 and 39, Vesey-street, New York. Officers—W. H. WOOLVERTON, President; H. W. WOOLVERTON, Vice-President and General Manager; H. W. CHIPMAN, Treasurer. Directors—W. H. WOOLVERTON, H. W. POPE, Henry G. Pearson, Henry W. Gwinner, A. S. DODD. District Office, 56, Exchange-place; 1253, Broadway, cor. 31st-street; 1439, Broadway, near cor. 41st-street; 8, Church-street; 52, East 14th-street, cor. Broadway; 185, 5th Avenue, cor. 23rd-street. Other convenient offices will soon be opened. Messenger, Fire, Police and Night Watchman. Instruments connected in residences, stores, banks, &c., without charge.

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**MEXICAN CENTRAL TELEGRAPH AND TELEPHONE COMPANY,** Temple-court, New York. F. M. DELANO, President; GEO. M. BLANCHARD, Secretary and Treasurer.

**MEXICAN NORTHERN TELEPHONE COMPANY,** Temple-court, New York, F. K. KAIN, President; G. S. CARRINGTON, Vice-President; ALVAN TENNEY, Secretary and Treasurer.

**MEXICAN PACIFIC TELEPHONE COMPANY.** Executive Offices, 95, Milk-street, Boston, Mass. E. B. WELCH, President; ALEX. L. HAYES, Secretary and Treasurer; L. E. ALLEN, General Manager, Mazatlan, Mexico. The Company has exchanges in Mazatlan, Colima, Tepic, Rosario, Noria, Guaymas, and Hermosillo, also La Paz and Trimfo, Lower California.

**MEXICAN TELEGRAPH COMPANY.** Capital, \$1,500,000; \$1,194,400 issued. General Offices, 37 and 39, Wall-street, New York. JAMES A. SCRYMSEAR, President; JAS. R. BEARD, Secretary. Directors—John E. Alexandre, E. E. Chase, Jas. K. Gracie, Wm. G. Hamilton, Henry L. Higginson, Robert B. Minturn, J. Pierpont Morgan, Alfred Pell, Jas. A. Scrymser. Tariffs, *via* Galveston. Messages will be accepted for transmission at all the Western Union Telegraph Offices to be transmitted from Galveston (Texas) *via* the lines of the Mexican Telegraph Company to Tampico, Vera Cruz, and City of Mexico.

**MEXICAN TELEPHONE COMPANY,** 12, Sears-buildings, Boston, Mass. T. C. BRYANT, Secretary; WM. REED, Treasurer; F. B. BEAUMONT, President; G. I. WILEY, City of Mexico, Manager.

**MISSOURI AND KANSAS TELEPHONE COMPANY.** General Office, 47, Wales-building, Kansas City, Mo. E. T. GILLILAND, President; J. R. MULVANE, Vice-President; C. D. CRANDALL, Secretary and Treasurer; E. L. SMITH, General Superintendent.

**MISSOURI PACIFIC RAILWAY COMPANY.** Telegraph Department, Sedalia, Mo. L. F. SHELDON, Superintendent of Telegraph.

**MORSE" UNDERGROUND CONDUIT COMPANY,** No. 220, South Third-street, Philadelphia. Capital, \$2,500,000. Shares, \$5.00 each. All stock full paid and non-assessable. Working Capital, 160,000 Shares of par value of \$800,000. ALBERT H. MERSHON, President; FREDERICK W. HAMMETT, Vice-President; HIRAM J. KEELER, Secretary; EDWIN LOUDERBACK, Treasurer. Board of Directors—Albert H. Mershon, Philadelphia; Frederick W. Hammett, Philadelphia; Edwin Louderback, Philadelphia; George B. Mershon, Philadelphia; Augustus P. Blomer, Philadelphia; Jacob Fox, Philadelphia; Wm. Passmore Hoopes, Philadelphia; Alfred S. Elliot, Wilmington, Del.; Edwin R. Cochran, Middletown, Del. Bankers, Fidelity Insurance, Trust and Safe Deposit Company, Philadelphia.



**MUTUAL UNION TELEGRAPH COMPANY.** Western Union Leased  
Executive Office, No. 135, Broadway, New York. J. G. MOORE, President; CHAS. J. G. SECRETARY; T. C. PURDY, General Manager; A. S. BROWN, General Superintendent.

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**NATIONAL TELEGRAPH COMPANY.** The Capital Stock is fixed at \$1,000,000 with the provision that it may be increased to \$10,000,000. The Stockholders are C. BRICE, Lima, O.; Frank E. Worcester, Brooklyn; and John W. Simpson, Herbert L. Walter Katte and James E. Childs, New York.

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**NEW YORK AND PENNSYLVANIA TELEPHONE AND TELEGRAPH COMPANY,** 195, Broadway, New York. P.O. Box, 3284.

**NORTH-WESTERN BELL TELEPHONE COMPANY OF CLINTON,** J. C. Root, Secretary, Lyons, Iowa; J. K. P. BALCH, President, Clinton, Iowa. Exchange at Morrison, Ill.; Sterling, Ill.; Mt. Carroll, Ill.; Lanark, Ill.; De Witt, Iowa Territorial Lines, De Witt, Iowa, to Clinton, Iowa; De Witt, Iowa, to Davenport, Iowa; De Witt, Iowa, to Maquoketa, Min.; Morrison, Ill., to Clinton, Iowa; Morrison, Ill., to Carroll, Ill.; Sterling, Ill., to Dixon, Ill.; Mt. Carroll, Ill., to Polo, Ill.; Mt. Carroll, Ill., to Freeport, Ill. Clinton and Lyons Bell Telephone Company, Exchange at Clinton, Iowa.

**PACIFIC BELL TELEPHONE COMPANY.** Office, No. 222, Sanson Street, San Francisco, Cal. GEORGE S. LADD, President; M. GREENWOOD, Treasurer; H. I. Vice-President; JNO. I. SABIN, Superintendent.

**PENNSYLVANIA TELEPHONE COMPANY.** General Office, Harrisburg. FRANCIS JORDAN, President; WM. KER, General Manager; M. H. BUEHLER, Secretary and Treasurer. P.O. Box, 123.

**POSTAL TELEGRAPH COMPANY.** Organized under the Laws of the State of New York, June 21st, 1881. Capital Stock, 210,000 shares \$100 each, \$21,000,000. First Mortgage, 6% 30 year Gold Bonds, \$10,000,000. Officers—JOHN W. MACKAY, President; HENRY CUMMINS, New York, Vice-President; H. L. HORTON, New York, Secretary. Directors—George D. Roberts, New York; George S. Coe, New York; George S. Hart, New York; William K. Soutter, New York; George S. Hart, New York; A. V. Boston; Ferd. W. Peck, Chicago; E. L. Gillette, Chicago; W. H. Fairbank, General Superintendent of Construction; George R. Williamson, Secretary and Auditor; E. A. Assistant General Superintendent; J. H. Emerick, District Superintendent, New York; Parker, District Superintendent, Chicago. Electricians—F. W. Cushing, New York; F. Taylor, New York; C. H. Radd, Chicago. J. Hemmens, Manager, New York; P. Flood, Chief Operator, New York Office; L. O. McPherson, Manager, Chicago. General Offices, No. 49, Broadway, New York. Working in connection with the Cable Co. (Mackay-Bennett).

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Reserve Fund. Has paid its beneficiaries over \$185,000, and accumulated a reserve fund of \$28,000. No officer or agent draws salary or commission. Average annual assessments to each member less than \$12. Any person, of either sex, in good health of not less than 18 or more than 45 years of age, employed in telegraph or telephone service, is eligible to membership; and should a member in good standing leave the service, but continue to pay all dues, and otherwise conform to the Constitution and By-laws, he can retain his membership. Initiation fee, \$2. Insurance, \$1,000. Officers—CLARENCE CARY, President; W. H. YOUNG, Vice-President; A. R. BREWER, Secretary; SAMUEL M. TAYLOR, Treasurer. Executive Committee—Clarence Cary, New York; A. R. Brewer, New York; W. H. Young, Washington, D.C.; E. B. Pillsbury, Boston, Mass.; Joseph Uhrig, Chicago, Ill.; Samuel M. Taylor, New York; F. W. Jones, New York; Joseph L. Edwards, New York; James Merrill, New York. Auditing Committee—Chas. Smith, Louisville, Ky.; E. C. Cockey, New York; T. F. Clark, New York. Agents—Charles C. King, Albany, N.Y.; D. Harly, Albuquerque, N.M.; John W. Brown, Augusta, Ga.; J. M. Stevens, Atlanta, Ga.; R. J. Bloxham, Baltimore, Md.; C. E. Bliss, Bangor, Me.; Chas. E. V. Draper, Bismarck, Dak.; E. B. Pillsbury, Boston, Mass.; A. J. Burton, Brooklyn, N.Y.; J. W. Tillinghast, Buffalo, N.Y.; E. M. Wolff, Cheyenne, Wyo.; G. W. Sheppard, Cincinnati, Ohio; Chas. H. Skelton, Chattanooga, Tenn.; D. M. O'Driscoll, Charleston, S.C.; J. Uhrig, Chicago, Ill.; H. L. Meltan, Cleveland, Ohio; W. R. Cathcart, Columbia, S.C.; A. M. Paddock, Columbus, Ohio; Day K. Smith, Crookston, Minn.; N. Fr. Hansen, Davenport, Ia.; W. B. Rundle, Denver, Col.; T. W. Hill, Detroit, Mich.; N. M. Booth, Evansville, Ind.; A. B. Keeler, Fort Benton, Mont.; E. D. Benedict, Grand Rapids, Mich.; David Hall, Galveston, Tex.; A. T. Cline, Grafton, W. Va.; S. A. Howard, Greensboro, N.C.; R. B. Ziegler, Harrisburg, Pa.; Alex. E. Hoyt, Halifax, N.S.; S. B. Curtis, Hartford, Conn.; F. A. Moore, Indianapolis, Ind.; J. G. Thornton, Jacksonville, Fla.; D. S. Fleming, Jackson, Mich.; Nelson E. Jacobs, Jackson, Tenn.; Isaac A. VanDusen, Jersey City, N.J.P.R.R.; M. D. Wood, Kansas City, Mo.; H. E. Doolittle, La Fayette, Ind.; W. M. Noble, La Porte, Ind.; E. C. Newton, Little Rock, Ark.; Charles Smith, Louisville, Ky.; W. G. Good, Metropolitan Tel. and Tel. Co., New York; B. P. Shreve, Mobile, Ala.; E. Winter, Montgomery, Ala.; H. E. Conley, Memphis, Tenn.; D. H. Henshaw, Milwaukee, Wis.; James Kent, Montreal, Quebec; A. H. Stewart, Nashville, Tenn.; J. M. Fairchild, Newhaven, Conn.; J. T. Alleyn, New Orleans, La.; Nath'l. Martell, No. Sydney, C.B.; G. W. Russell, New London, Conn.; C. D. Reed, N.Y.; L. Erie and W. R. R. (21, Cortlandt-street, New York; Frank Ross, Oil City, Pa.; A. J. Pattison, Ogden, Utah; C. Dwyer, Omaha, Neb.; J. I. Sabin, Pacific Telephone Co., San Francisco; Chas. E. Wise, Philadelphia, Pa.; G. H. Grace, Phillipsburgh, N.J.; J. B. Hammatt, Peoria, Ill.; C. L. LeBaron, Pensacola, Fla.; J. E. Palmer, Pittsburgh, Pa.; S. K. Rupley, Poughkeepsie, N.Y.; C. D. Livermore, Portland, Me.; F. H. Lamb, Portland, Oregon; Jas. S. Hall, Providence, R.I.; John W. Watkins, Petersburg, Va.; W. H. Runyon, Reading, Pa.; A. J. Stoddard, Rochester, N.Y.; Frank H. Macdonell, Reno, Nev.; H. H. Hamilton, Sayre, Pa.; R. O'Brien, Scranton, Pa.; Luther G. Field, Syracuse, N.Y.; R. T. Clinch, St. John, N.B.; Geo. W. Brownson, St. Louis, Mo.; Geo. B. Evans, St. Paul, Minn.; A. P. Dubois, San Francisco, Cal.; H. Griffith, Savannah, Ga.; W. J. Denver, Springfield, Mass.; W. W. Kelchner, Springfield, Ill.; John F. Reynolds, Southern Bell Telephone Co.; J. Lanksail, Toronto, Ont.; J. W. Spencer, Troy, N.Y.; E. W. Fish, Toledo, Ohio; Perry Hood, Vincennes, Ind.; W. H. Young, Washington, D.C.; Jno. G. Tomlinson, Wheeling, W. Va.; G. W. Gates, White River Junction, Vt.; P. Bruner, Wellsville, Ohio; E. W. Bradford, Worcester, Mass.; D. Van Nostrand, Watertown, N.Y. Secretary's address, P.O. Box 3175, W. U. Telegraph Building, room 58, New York.

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

**TELEPHONE AND TELEGRAPH CONSTRUCTION COMPANY, No. 68, Griswold street, Detroit, Mich.** G. W. BALCH, President; HUGH McMILLAN, Secretary and Treasurer; W. A. JACKSON, General Manager; G. A. MCKINLOCH, Auditor and Cashier.

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**UNITED STATES UNDERGROUND TELEGRAPH COMPANY.** SAMUEL A. WOOD, President; JOSEPH G. SWEZEY, Secretary. Office, 69, William-street, New York, U.S.A. Are now operating under the Woodward System.

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**WEST INDIA TELEGRAPH AND TELEPHONE COMPANY, LIMITED.** Capital Stock—\$250,000. J. P. DIETER, President, Chillicothe, Ohio; ALBERT DOUGLAS, Jr., Secretary; C. H. McNEILL, Treasurer; T. C. MORFORD, Registrar of Transfers, Long Branch, New Jersey. PRESTON C. NASON, Electrician and General Manager. San Juan, Porto Rico. Cable Address, "Nason."

**EASTERN UNION TELEGRAPH COMPANY.** List of Officers and Directors of the Western Union Telegraph Company, Western Union Buildings, 195, Broadway, New York City, 1883. Capital, \$80,000,000. Operates in connection with the Great North Western Telegraph Company of Canada; the Central, South American, and Mexican and Governmental Telegraph Companies of South America; the Mutual Union (leased lines); the International Ocean Telegraph Company; and the American Bell Telephone Company; all the principal lines in the Western Continent, and reaching by telegraph or telephone every city, town, or village in the Western Continent. By its contracts with the Consolidated Cable Companies, the Western Union Telegraph Company handles all business passing to and from Europe and America. **NORVIN GREEN**, President; **THOMAS T. ECKERT**, Vice-President and General Manager; **AUGUSTUS SCHELL**, **HARRISON DURKEE**, **JOHN VAN HORNE**, Vice-Presidents; **D. H. BATES**, Acting Vice-President and Assistant General Manager; **J. B. VAN EVERY**, Acting Vice-President and Auditor; **A. R. BREWER**, Secretary; **R. H. ROCHESTER**, Treasurer; **CLARENCE CARY**, Attorney. Board of Directors—Norvin Green, C. M. Fry, A. B. Graves, Thomas L. Eckert, John Van Horne, Augustus Schell, R. H. Rochester, D. H. Botes and Henry Hewitz. Executive Committee—Norvin Green, Thomas T. Eckert, John Van Horne, Augustus Schell, Harrison Durkee, Geo. J. Gould, Jay Gould, Russell Sage, Alonzo B. Cornell, Sidney Dillon, Cyrus W. Field. Eastern Division General Superintendent—Charles A. Tinker, New York. Eastern Division District Superintendents—W. C. Hunstone, New York; R. T. Clinch, St. John, N.B.; Thomas Roche, Boston, Mass.; G. W. Gates, White River Junct., Vt.; S. B. Gifford, Syracuse, N. Y.; J. E. Zeublin, Philadelphia, Pa.; W. J. Holmes, New York; Chas. O. Rowe, Titusville, Pa. Central Division General Superintendent—R. S. Clowry, Chicago, Ill. Central Division District Superintendents—F. H. Tubbs, Chicago, Ill.; L. C. Baker, St. Louis, Mo.; J. J. Dickey, Omaha, Neb.; Frank Jaynes, San Francisco; E. P. Wright, Cleveland, O.; John F. Wallick, Indianapolis, Ind.; I. N. Miller, Cincinnati, O.; I. McMichael, Minneapolis, Minn. Southern Division General Superintendent—G. W. Trabue, Nashville, Tenn. Southern Division District Superintendents—J. B. Tree, Richmond, Va.; James Compton, Nashville, Tenn.; J. A. Brenner, Augusta, Ga.; C. G. Meriwether, Mobile, Ala. James Merihew, Assistant General Superintendent, New York. William Holmes, Superintendent of Tariff and Check Bureau, New York. D. Doren, General Superintendent of Construction, New York. Supply Department—William Hunter, Superintendent and General Purchasing Agent, New York; E. C. Cockey, Storekeeper, New York; Jas. S. Dickinson, Storekeeper, Chicago; H. H. Ward, Cashier and Money Transfer Agent, New York City.

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# LIST OF AMERICAN ELECTRIC LIGHT COMPANIES

WITH

NAMES OF DIRECTORS, PARTICULARS OF CAPITAL, &c.

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**B** **BLANCHARD ELECTRIC LIGHT POWER COMPANY**. Officers—Vice-President, W. BLANCHARD, M.D., President; HENRY P. Sisson, Secretary and Treasurer; G. W. N. YERGEN, Business Manager. Central Office, No. 27, Union-square, New York.

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**C** **COLORADO EDISON ELECTRIC LIGHT COMPANY**, No. 390, Curtis-street, Denver, Colorado. WM. ORTON, President; WM. MOORE, Vice-President; W. D. TOLSON, Treasurer; WM. M. COX, Secretary; S. T. ARMSTRONG, General Superintendent.

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## **A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

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**ECTRIC STORAGE AND LIGHT COMPANY** (organized under laws of  
Massachusetts, own the Patents for Faure's Storage Batteries or Electrical Energy Accumu-  
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CHARLES E. EMERY, Trustees. N. S. KEITH, Electrician and Manager. Office, 237, Broadway,  
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Lighting and Furnishing of Electric Power.

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**MODE ISLAND ELECTRIC COMPANY,** 24, Butler Exchange, Providence, R.I.  
HENRY HOWARD, President; J. W. DUXBURY, Secretary.

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**RHODE ISLAND ELECTRIC LIGHTING COMPANY**, Providence, R.I. 0  
Board of Trade-building, Market-square. Station No. 1, No. 270, Dyer-street. Superintendent  
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Lights of 2,000 Nominal Candle Power with Dynamo. Also applications for the forma  
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E. Westen, L. Fitzgerald, John A. Stewart, W. T. Hatch, T. H. Hubbard, Henry Day,  
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**VAN DEPOELE ELECTRIC LIGHT COMPANY**, Makers of Electric L  
Apparatus (under Van Depoele Patents. Office and Works, 205, Van Buren-street, Ch  
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Norman Williams, Edson Keith, John M. Clark, John Cramer, Anthony F. Seal  
Z. G. Simmons.

## ELECTRIC LIGHT COMPANIES IN THE UNITED STATES

FROM *THE ELECTRICIAN* (New York).

SOME idea of the extent and character of the growth of the Electric Light interest in America  
obtained from the list of electrical companies, chiefly electric light companies, which we publish  
and . . . This list has been compiled from the official records of the State of New York, an  
such general information as we have been able to obtain in regard to two or three of the pr  
companies doing business here, which were organized in other States. As nearly all the States  
Union have general laws, under which corporations may be organized, and as the mania for spec  
has been even more prevalent in some of the other States, than in New York, the list which w  
probably comprises only a very small part of the companies actually organized in the United  
The data obtainable from official records are extremely meagre, and do not generally comprise ev  
amount of cash capital paid in; so that the information we are able to give, even in regard to t  
only of the most general character.

## F. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

Some time since, seven of the principal companies formed an association under the name of the Gramme Electrical Company, the principal object of which was understood to be the enforcement of the Gramme patent, and the patents of the associated companies, against all outside of the organization. Although this object does not appear to have been pursued as yet in a very vigorous manner, the Gramme Company, still forms the basis of an extremely powerful combination, which cannot well be disregarded.

It will be observed, that nearly all of the Gramme companies were organized at a comparatively early date, and all of them, with the exception of the Jablockhoff Company, appear to have taken a much larger share in the legitimate development of the business, than any of the companies outside of the organization. We think it would be within bounds to say, that nineteen-twentieths of all the legitimate commercial business done in this country has been done by the Gramme Companies. Of these, the Brush Company, the United States Company, and the Edison Company, appeared to have secured a much larger share of the business, than any of the others, and the two former are the only members of the association, so far as we can ascertain, which have as yet paid dividends.

The Brush, the Fuller, and the American Companies are working are systems; the Edison Company makes its attention, exclusively, to the incandescent system, the United States Company is introducing the Edison systems. The business of these companies consists mainly in the manufacture and sale of apparatus, both to private users and to subsidiary organizations, formed for furnishing lights from central stations, and in the disposal of rights under their patents, to local organizations. The position of the Edison Company however, is somewhat peculiar, as it does not appear to conduct any manufacturing business directly: the dynamo machines, lamps, fixtures, and other apparatus of the Edison system being manufactured by separate organizations, the details of which we have not been able to ascertain. The position of the Brush Company in regard to patents, is also somewhat different from that of the others, in that it does not own the Brush patents, but holds an exclusive license under them from Mr. Brush, at a royalty of twenty per cent. upon its receipts from the sale of apparatus.

We have not been able to ascertain definitely, the amount of cash capital invested in the different Gramme Companies. The Brush Company was the outgrowth of the Telegraph Supply Company of New England, which was organized in 1875, with a capital of \$100,000, for the purpose of manufacturing telegraphic instruments, and other electrical apparatus. Some time in 1877, this company took up the manufacture of the Brush apparatus, in connection with its other business, and in 1880 the name of the company was changed to its present form. In 1881, the capital of the company was increased to its present amount of \$3,000,000. How much of the original capital stock, or of the increased capital stock was issued for cash, we have not been able to ascertain, but it is generally believed that the increased stock was not all issued for cash.

The United States Company was originally organized with a capital of \$250,000, which has been increased from time to time to its present amount of \$1,500,000. Of this it appears, from the annual report filed by the company, that \$970,000 was issued for cash, and \$530,000 for patents and other property.

The Western Company has been practically absorbed by the United States Company. Of the capital stock of this company \$140,000 appears to have been issued for cash, and \$60,000 for patents.

The annual report of the Fuller Company shows that \$205,900 of its stock has been issued for cash, and \$664,100 for patents and property.

The Edison Company was originally organized with a capital of \$300,000, which has been increased from time to time to its present amount of \$720,000. The annual report of this company shows that, of its \$312,891 has been issued for cash, and \$300,400 for patents and other property.

Of the capital stock of the American Company \$98,750 appears to have been issued for cash, and the remaining \$26,250 has, we suppose, been issued for patents or other property. This company has its principal place of business at New Britain, Conn., and should not be confounded with the American Electric Light Company of New York, of which, we are informed, it has no connection.

Of the capital stock of the Jablockhoff Company, \$41,600 appears to have been issued for cash, and \$2,200,000 for patents and other property.

Probably the amount of cash capital directly invested in all of the Gramme companies, may be estimated at from three to four million dollars.

Of the ninety-two companies embraced in the main part of the list, four appear to have been organized for working or disposing of the Edison foreign patents, and nine are subsidiary or local organizations of the different Gramme companies, formed chiefly for furnishing lights from central stations. Most of the latter companies have invested considerable amounts of capital in erecting stations for procuring plant, and some of them are already doing a large and apparently profitable business. The aggregate investment of the three local companies, which are now operating stations in this city, is, nearly as we can ascertain the facts, between two and three million dollars. A large number of similar companies have been organized by the Gramme companies in other States, and the total amount of capital actually invested in them must be very considerable. We have no means of ascertaining this amount with any degree of precision, but should say that the Gramme companies and their subsidiary organizations must represent a cash investment of at least ten million dollars, and probably much more.

Of the remaining seventy-nine companies, we have not been able to discover that more than three or four have any apparatus in actual commercial use. Perhaps ten or a dozen others have done more or less experimental work, and are making some effort to get their apparatus into proper form for practical purposes.

Many of the others have died a natural death, and many of them appear to have been organized for purposes of speculation, pure and simple. It has been evidently the aim of the founders of these companies to meet the unlimited demand for stock, which they believe to exist, rather than to undertake the more expensive and less profitable task of supplying the public with efficient apparatus. Judging from the enormous aggregate capitalization shown by our list, it would seem that sufficient provision has already been made for absorbing the surplus cash of even the most credulous possessor of capital.

The total nominal capital of the companies embraced in our list, is \$122,445,000; deducting from this the \$3,325,000 capital stock of the three Gramme companies, which were not organized in New York, we have \$119,120,000 as the capitalization of the companies organized in a single State. The population of New York is, in round numbers, about one-tenth that of the Union, and if we assume that



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

companies have been formed in the other States at about the same rate, in proportion to their population as in New York (an assumption which we think would not be far out of the way), we should have \$1,200,000,000 as representing the nominal capitalization of the electric light, electric power and battery companies organized in the United States. Even these figures do not appear to be within the limits of the movement, as new companies are coming into existence more rapidly than ever before.

We have no means of estimating, even approximately, the amount of capital actually invested in the business by the companies which are embraced in our list, outside of the Gramme organizations, which we believe it to be comparatively small. Deducting from the total capital stock of all the companies \$15,065,000, the stock of the Gramme companies and their subsidiary organizations, \$106,380,000 as the capitalization of the other companies. We doubt if all these latter companies together, have invested \$500,000 in actual development and prosecution of the business. So official records disclose the amount of cash capital paid in to the companies of this group, that it is to be very small. The greater part of these companies have filed no annual report, many of them yet having been in existence for a year, and many of those of earlier incorporation have been practically abandoned. The following are the figures in regard to payment of capital given in the reports which have been filed:—

## GRAMME COMPANIES.

| NAME OF COMPANY.                         | Date of Incorporation. | Capital Stock. | Nominal par value per share | System       |
|------------------------------------------|------------------------|----------------|-----------------------------|--------------|
| Brush Electric Co. ....                  | Oct. 18, 1875          | 3,000,000      | 100                         | Brush.       |
| Weston Electric Light Co. ....           | July 7, 1877           | 200,000        | 100                         | Weston.      |
| United States Electric Lighting Co. .... | June 8, 1878           | 1,500,000      | 100                         | Weston and   |
| Fuller Electrical Co. ....               | Oct. 2, 1878           | 870,000        | 100                         | Fuller and W |
| Edison Electric Light Co. ....           | Oct. 17, 1878          | 720,000        | 100                         | Edison.      |
| American Electric Co. ....               | July 16, 1880          | 125,000        | 25                          | Thomson-Ho   |
| Jablochkoff Electric Lighting Co. ....   | Jan. 27, 1881          | 2,250,000      | 100                         | Jablochkoff. |
| Total.....                               |                        | \$8,665,000    |                             |              |

## OTHER COMPANIES INCORPORATED IN THE STATE OF NEW YORK INCLUDING GRAMME SUB-COMPANIES.

| NAME OF COMPANY.                         | Date of Incorporation. | Capital Stock. | Nominal par value per share | System       |
|------------------------------------------|------------------------|----------------|-----------------------------|--------------|
| U. S. Electric Engine Co. ....           | Oct. 24, 1877          | 1,000,000      | 100                         | Sawyer.      |
| Hussey Electric Magnetic Engine Co. ...  | June 21, 1878          | 100,000        | 100                         | Hussey.      |
| New York Electric Light Co. ....         | Nov. 11, "             | 5,000,000      | 100                         |              |
| National Electric Light and Power Co. .  | Nov. 20, "             | 300,000        | 100                         | Heikel.      |
| Brooklyn Electric Light Co. ....         | Dec. 16, "             | 2,500,000      | 100                         |              |
| Dynamo Electric Co. ....                 | Jan. 4, 1879           | 500,000        | 100                         |              |
| International Electrical Co. ....        | Jan. 10, "             | 24,000         | 100                         |              |
| Manhattan Electric Light Co. ....        | Jan. 18, "             | 3,000,000      | 10                          |              |
| Hussey Electro Magnetic Motor Co. ....   | July 15, "             | 300,000        | 50                          | Hussey.      |
| American Dynamo Electric Machine Co. .   | Oct. 27, "             | 5,000          | 50                          | Levet-Muller |
| Metropolitan Electric Light Co. ....     | Feb. 17, 1880          | 200,000        | 40                          |              |
| Rochester Electric Light Co. ....        | Feb. 23, "             | 100,000        | 20                          | Weston and   |
| Universal Electric Light Co. ....        | April 8, "             | 10,000,000     | 100                         | Beardslee.   |
| Arnoux-Hochhausen Electric Co. ....      | Sept. 3, "             | 100,000        | 100                         | Arnoux-Hoe   |
| New Electric Light Co. ....              | Sept. 8, "             | 100,000        | 100                         | Lugo.        |
| Brush Electric Light Co., of New York    | Sept. 10, "            | 100,000        | 100                         | Brush.       |
| Lugo Dynamo Electric Co. ....            | Oct. 2, "              | 100,000        | 100                         | Lugo.        |
| Dynamo Electric Power and Light Co. .    | Oct. 13, "             | 5,000,000      | 100                         |              |
| Edison Illuminating Co. ....             | Dec. 17, "             | 1,000,000      | 100                         | Edison.      |
| Manhattan Electric Light Co. ....        | Dec. 20, "             | 600,000        | 100                         |              |
| Franklin Electric Light Co. ....         | Dec. 23, "             | 600,000        | 100                         |              |
| Edison E. L. Co. of Europe, Limited ..   | Dec. 24, "             | 2,000,000      | 100                         | Edison.      |
| N. Y. Electric Light Association ....    | Dec. 27, "             | 300,000        | 100                         | Daft.        |
| United States Illuminating Co. ....      | Jan. 31, 1881          | 1,000,000      | 100                         | Weston and   |
| Blanchard Electric Light and Power Co. . | Jan. 11, "             | 1,000,000      | 10                          | Blanchard.   |
| Higgs Electric Light and Power Co. ....  | Jan. 11, "             | 500,000        | 5                           | Higgs.       |
| Nassau Electric Light Co. ....           | Feb. 1, "              | 250,000        | 100                         |              |
| Standard Electric Light Co. ....         | Feb. 18, "             | 250,000        | 100                         | Holcombe.    |
| Brush Electric Illuminating Co. ....     | Feb. 19, "             | 1,000,000      | 100                         | Brush.       |
| American Electric Light Co. ....         | April 4, "             | 500,000        | 50                          | Bohm, Fox &  |
| Albany Electric Illuminating Co. ....    | April 7, "             | 100,000        | 100                         | Brush.       |
| American Electric Light Co. ....         | April 12, "            | 400,000        | 20                          | Markland.    |
| Saratoga Electric Illuminating Co. ....  | May 2, "               | 50,000         | 100                         |              |
| Edison Electric Light Co. of Havana .... | June 17, "             | 1,000,000      | 100                         | Edison.      |
| Edison Electric Light Co. of Porto Rico  | June 17, "             | 1,000,000      | 100                         | Edison.      |
| Electric Motive Power Co. ....           | June 25, "             | 500,000        | 100                         |              |
| Manhattan Electric Power Co. ....        | June 27, "             | 100,000        | 100                         |              |



# ERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## HER COMPANIES INCORPORATED IN THE STATE OF NEW YORK,

INCLUDING GRAMME SUB-COMPANIES—Continued.

| NAME OF COMPANY.                     | Date of Incorporation. | Capital Stock. | Nominal par value per share | System.                |
|--------------------------------------|------------------------|----------------|-----------------------------|------------------------|
| Electric Light Co., of Rochester..   | June 25, 1881          | 100,000        | 100                         | Brush.                 |
| Electric Co. ....                    | Aug. 2, ..             | 500,000        | 100                         | Hochhausen.            |
| F. Electric Light & Power Co.        | Aug. 24, ..            | 50,000         | 100                         | Daft.                  |
| Electric Light and Power Co.         | Sept. 13, ..           | 600,000        | 1                           | Markland.              |
| Electric Light Co. ....              | Oct. 2, ..             | 1,000,000      | 100                         | Hans J. Muller.        |
| Electric Light Co. ....              | Oct. 7, ..             | 6,000,000      | 100                         |                        |
| Electric Light and Supply Co..       | Oct. 24, ..            | 500,000        | 25                          | Charles E. Long.       |
| Electric Railway & Power Co.         | Oct. 24, ..            | 10,000,000     | 25                          |                        |
| Electric Light Co. ....              | Oct. 28, ..            | 1,000          | 10                          |                        |
| , for Isolated Lighting .....        | Nov. 23, ..            | 1,000,000      | 100                         | Edison.                |
| Electric Light & Moor Power Co.      | Dec. 8, ..             | 500,000        | 10                          | Holcombe.              |
| Electric Co. ....                    | Dec. 13, ..            | 500,000        | 100                         |                        |
| Electric Colonial Co. ....           | Jan. 12, 1882          | 100,000        | 100                         | Edison.                |
| Electric Light and Power Co. ....    | Jan. 16, ..            | 2,500,000      | 50                          | Keith.                 |
| Electric Light Co., of N. Y. ....    | Jan. 23, ..            | 500,000        | 50                          | Sheridan.              |
| Electric Light and Power             |                        |                |                             |                        |
| he United States. ....               | Jan. 25, ..            | 150,000        | 10                          | F. H. Beers.           |
| Electric E. L. and Power Co., of     |                        |                |                             |                        |
| Co., N. Y. State .....               | Feb. ..                | 30,000         | 25                          | F. H. Beers.           |
| Electric Light Co. ....              | March 3, ..            | 500,000        | 100                         | Daft.                  |
| Electric Light and Power Co.         | March ..               | 10,000,000     | 100                         |                        |
| Electric Light and Power             |                        |                |                             |                        |
| he State of N. Y. ....               | March 9, ..            | 300,000        | 10                          | F. H. Beers.           |
| Incandescent Electric Light Co. .... | March 17, ..           | 800,000        | 100                         | Swan.                  |
| Incandescent Electric Light Co.,     |                        |                |                             |                        |
| Pacific Coast .....                  | April 24, ..           | 500,000        | 100                         | Swan.                  |
| Force Co. ....                       | May 20, ..             | 5,000,000      | 100                         | Faure.                 |
| Electric Light Co. ....              | May 24, ..             | 2,000,000      | 100                         | Brush-Swan.            |
| Storage and Power Co. ....           | June 5, ..             | 100,000        | 100                         | Buel.                  |
| and Chicago Electric Under-          |                        |                |                             |                        |
| Co. ....                             | June 22, ..            | 2,500,000      | 5                           |                        |
| de Electric Co. ....                 | July 14, ..            | 20,000         | 100                         | Vanderweyde.           |
| Electric Light and Construction Co.  | July 28, ..            | 100,000        | 100                         |                        |
| Electric Manufacturing Co. ....      | Aug. 2, ..             | 40,000         | 100                         | Parker.                |
| Electric Light and Power             |                        |                |                             |                        |
| he city of Binghamton .....          | Aug. 5, ..             | 75,000         | 10                          | F. H. Beers.           |
| on Magneto Electric Light &          |                        |                |                             |                        |
| Co. ....                             | Aug. 9, ..             | 50,000         | 10                          |                        |
| American Electric Light Co. ....     | Aug. 9, ..             | 300,000        | 100                         | Bohm, Fox & Bernstein. |
| nd Electric Storage Co. ....         | Aug. 10, ..            | 2,000,000      | 100                         | Faure.                 |
| nderground Electric Co. ....         | Aug. 15, ..            | 2,500,000      | 100                         |                        |
| Electric Manufacturing Co. ....      | Aug. 16, ..            | 500,000        | 100                         | Charles E. Ball.       |
| Incandescent Lamp Co. ....           | Sept. 2, ..            | 200,000        | 100                         | Slattery.              |
| Electric Co. ....                    | Sept. 6, ..            | 800,000        | 100                         | Keith.                 |
| nd Electric Light Co. ....           | Sept. 8, ..            | 1,200,000      | 100                         | Sawyer, Man & Knowles  |
| Electric Storage Co. ....            | Oct. 7, ..             | 2,000,000      | 100                         | Faure.                 |
| Electric Light and Power Co., of     |                        |                |                             |                        |
| .....                                | Oct. 9, ..             | 300,000        | 10                          |                        |
| nd Electric Light & Power Co.        | Oct. 19, ..            | 500,000        | 10                          | Hussey.                |
| Electric Storage Co. ....            | Oct. 21, ..            | 2,000,000      | 100                         | Faure.                 |
| Electric Light and Power Co.         | Nov. 2, ..             | 1,000,000      | 100                         | Olmsted.               |
| Electric Storage and Light Co. ....  | Nov. 15, ..            | 2,000,000      | 100                         | Faure.                 |
| Electric Light and Power             |                        |                |                             |                        |
| he city of Brooklyn .....            | Nov. 17, ..            | 1,000,000      | 10                          | F. H. Beers.           |
| Electric Light Co. ....              | Nov. 17, ..            | 1,000,000      | 100                         | Schuyler.              |
| Electric Light and Storage Co. ....  | Nov. 23, ..            | 2,000,000      | 100                         | Faure.                 |
| Electric Light Co. ....              | Dec. 1, ..             | 100,000        | 25                          |                        |
| Electric Light and Power Co. ....    | Dec. 7, ..             | 1,000,000      | 10                          | Hussey.                |
| Electrical Co., for N. Y. ....       | Dec. 8, ..             | 350,000        | 100                         |                        |
| Electrical Co., for Canada .....     | Dec. 8, ..             | 350,000        | 100                         |                        |
| & Brooklyn Electric Light Co.        | Dec. 30, ..            | 25,000         | 10                          |                        |
| Electric Manufacturing Co. ....      | Jan. 28, 1883          | 60,000         | 100                         |                        |
| Accumulator Co. ....                 | Feb. 21, ..            | 5,000,000      | 100                         | Sellon-Volckmar.       |
| Foreign Electric Light Co. ....      | March 6, ..            | 1,000,000      | 100                         | Schuyler.              |
| Total.....                           |                        | \$113,780,000  |                             |                        |

and Total { Gramme Companies..... \$8,665,000  
Other Companies..... 113,780,000  
\$129,445,000

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISE

|                                               |    | <i>Issued for Property.</i> | <i>Issued for Cash.</i> |
|-----------------------------------------------|----|-----------------------------|-------------------------|
| The Arnoux-Hochhausen Electric Company ..     | .. | \$ 100,000                  |                         |
| „ Lugo Dynamo Electric Company ..             | .. | 99,600                      | \$ 400                  |
| „ New York Electric Light Association ..      | .. | 300,000                     |                         |
| „ Blanchard Electric Light & Power Company .. | .. | 1,000,000                   |                         |
| „ Excelsior Electric Company ..               | .. | 482,500                     | 16,750                  |
| „ Markland Electric Light & Power Company ..  | .. | 600,000                     |                         |
| „ Sheridan Electric Light Company ..          | .. | 500,000                     |                         |
| „ Fitch Electric Light Company ..             | .. | 100,000                     |                         |
| Total .. .. .                                 | .. | <u>\$3,182,100</u>          | <u>\$17,150</u>         |

It will probably be safe to assume that the "property" for which the stock is issued, consists nearly all cases, of patents. If the proportion of cash to patents should continue the same through rest of the list, the amount of cash actually paid in to all the companies of this group would be a more than the amount we have indicated. Undoubtedly, this does not by any means represent extent of the contribution levied upon the investing public by these enterprises. The stock having issued to promoters for the patents, has been sold by them to the public at large for such prices as can be obtained. How much has been realized by the promoters of these companies, in this way, we can tell, but the aggregate amount must be very large.

While the greater part of the companies, recently organized, have been devoting their attention principally to experiments, and to speculation, the principal companies, which entered the field earlier date, have been steadily strengthening their commercial position.

As we have already said, the legitimate business already done, has been done almost entirely by Gramme companies, and all indications seem to point to a further concentration of the business in hands, rather than a distribution, of any considerable part of it, among additional competitors.

It appears, from a circular recently issued by the Gramme company, that the associated company own, or control, between four and five hundred patents, relating to electric light and power. This number of patents, if used together, and backed by the great commercial weight of the company owning them, would prove an extremely formidable obstacle to the success of any outside competitor.

Considerable misapprehension appears to exist in regard to the relation of patents, to the development of the business. As the fundamental principles of dynamo machines, arc lamps, incandescent lamps, and other necessary parts of the apparatus, have long since become public property, it is by hastily assumed, that existing patents cover only immaterial variations, which are not essential. It is an entirely mistaken view. Existing patents, in fact, cover a great mass of improvements, some of which are of great importance in their nature, many of them relating only to details, but together, representing a difference between the crude and imperfect apparatus of some years since, and the complete and efficient systems which some of the leading companies are now introducing. It is quite easy to make one apparatus without infringing any patent, but it is extremely difficult, if not altogether impossible, for any person, except those who entered the field at an early date, to make apparatus which is capable of competing in the market, without infringing a good many patents.

The difficulty of avoiding existing patents has been materially increased by the policy, which the principal companies have adopted, of not selling detached parts of apparatus, so that any competitor must be prepared to furnish a complete system, in order to do any business at all.

**W YORK BOARD FIRE UNDERWRITERS**, Boreel-building, No. 115 Broadway, New York, rooms Nos. 32 to 38. The New York Board of Fire Underwriters at a meeting held this day (Jan. 12, 1882) adopted the following standard for electric light wires, lamps, etc., in lieu of former standard:

**CAPACITY OF CONDUCTORS (for Arc Lights).**—The conductor must have a weight per running foot at least equal to that of the wire (or parallel group of wires), constituting the main circuit of the magnetic regulator of the electric lamps, or of the armature of the machine employed, which ever of these is the largest. **For Incandescent Lights.**—Wherever a connection is made between a larger and a smaller conductor at the entrance to or within a building, some approved automatic device must be introduced in the circuit of the smaller conductor, whereby it shall be interrupted whenever the current passing through it is in excess of its safe carrying capacity. The safe carrying capacity of a wire is that current which it will convey without becoming painfully warm when grasped in the closed hand.

**INSULATION.**—All wires, machines and lamps to be so mounted and secured as to insure complete and continuous insulation, with the exception of those parts (such as portions of the lamps or machines for example), where insulation is impossible, and in this case accidental contact with exterior objects must be prevented by appropriate screens or the like. In no case must "ground circuits" be employed, or any portion of the system be allowed to come into conducting connection with the earth through water or gas pipes or otherwise. Exposed wires must be covered with at least two coatings, one of insulating material next the wire, of a thickness and material approved by the Board, and another outside of this, of a material calculated to protect the former from abrasion or other mechanical injury. Where there is a possible exposure to water, the first or second coating must be impervious to that fluid. Wherever electricity is carried into a building by conductors from an exterior source, a "cut out" must be provided at a point as near as possible to the entrance to such building. The outgoing and returning wires for Arc Lights should enter and leave each building at points at least one foot from each other. The wires passing through the exterior walls of a building should be firmly encased in substantial tubes of non-conducting material, not liable to absorb moisture, and placed in such a manner as to prevent rain water from entering the building along the wire. In running along walls and the like, wires should be rigidly attached to the same by non-conducting fastenings (the wires themselves being well insulated), and should not be hung from projecting insulators in loose loops. All wires should be placed at a distance of eight inches for Arc Lights and two and one-half inches for Incandescent Lights from each other, and wherever they approach any other wire or conducting body capable of furnishing another circuit or ground connection, they must be rigidly secured and separated from the same by some continuous solid non-conductor, such as dry wood, of at least one-half inch in thickness. Wherever wires are carried through walls, floors or partitions in buildings, they must be surrounded by a special insulating tube of substantial material. All joints in wires must be made in such a manner as to secure a perfect and durable contact. Continuous wires (without joints) to be used as far as possible.

**GLOBES.**—Arc Lights must be protected by glass globes, enclosed at the bottom to prevent the fall of ignited particles, and where inflammable materials are present below the lamps, a wire netting must be added to keep the parts of the globe in place in case of its fracture during use. All broken and cracked globes to be at once replaced by perfect globes. In show windows and other places where inflammable materials are near the lights, spark arrestors shall be placed at the top of the globes.

**AUTOMATIC SHUNT.**—Wherever a current of such high electro-motive force is employed that if concentrated on one lamp of the series, it would produce an arc capable of destroying or fusing parts of such lamp, an automatic switch must be introduced in each lamp by which it will be thrown out of circuit before the arc approaches any such dangerous extent. Companies furnishing electricity from central stations must enter into an agreement with the New York Board of Fire Underwriters, binding themselves to test their lines for ground connections at least *once* every day (and preferable three times per day), and to report the result of such tests to the Board weekly. Means by which those in charge of the dynamo-electric machines will be warned of any excessive flow of current, or means whereby the same will be automatically checked, must in all cases be provided.

# LIST OF THE PRINCIPAL SCIENTIFIC AND LITERARY INSTITUTIONS IN THE UNITED STATES.

THE BOLD-FACED NUMBERS INDICATE THE MOST IMPORTANT SOCIETIES

S. Societies publishing Transactions; L. Libraries exclusively, though the others also have libraries: M. M. O. Observatories; T. Technical Schools; U. Universities; E. Electrical Engineering.  
This arrangement is alphabetical by towns and not by States.

|                           |     |                                               |
|---------------------------|-----|-----------------------------------------------|
| Albany, N. Y. ....        | 1   | Albany Institute.....                         |
| " " .....                 | 2   | N. Y. State Agricultural Society .....        |
| " " .....                 | 3   | N. Y. State Library .....                     |
| " " .....                 | 4   | State Museum of Natural Sciences .....        |
| Allegheny, Pa. ....       | 5   | Observatory .....                             |
| Annapolis, Md. ....       | 6   | U. S. Naval Academy .....                     |
| Ann Arbor, Mich. ....     | 7   | University of Michigan .....                  |
| " " .....                 | 8   | Observatory .....                             |
| Atlanta, Ga. ....         | 9   | City Library.....                             |
| Baltimore, Md. ....       | 10  | Johns Hopkins University .....                |
| " " .....                 | 11  | Maryland Academy of Sciences .....            |
| " " .....                 | 12  | Peabody Institute .....                       |
| Bethlehem, Pa. ....       | 13  | Packer University .....                       |
| Bloomington, Ind. ....    | 14  | The "Owen Cabinet" .....                      |
| Boston, Mass. ....        | 15  | Amer. Academy of Arts and Sciences.....       |
| " " .....                 | 16  | Amer. Statistical Association .....           |
| " " .....                 | 17  | Athenæum .....                                |
| " " .....                 | 18  | Mass. Institute of Technology .....           |
| " " .....                 | 19  | Boston Natural History Society .....          |
| " " .....                 | 20  | Public Library of the City .....              |
| " " .....                 | 21  | State Library .....                           |
| Brooklyn, N. Y. ....      | 22  | Brooklyn Library .....                        |
| Brunswick, Me. ....       | 23  | Bowdoin College .....                         |
| Buffalo, N. Y. ....       | 24  | Buffalo Society of Natural Sciences .....     |
| Burlington, Vt. ....      | 25  | University of Vermont .....                   |
| Cambridge, Mass. ....     | 26  | Harvard University .....                      |
| " " .....                 | 27  | Lawrence Scientific School .....              |
| " " .....                 | 28  | Museum of Comparative Zoology .....           |
| " " .....                 | 29  | Observatory.....                              |
| " " .....                 | 30  | Peabody Museum .....                          |
| Charleston, S. C. ....    | 31  | College of Charleston.....                    |
| " " .....                 | 32  | Library Society .....                         |
| " " .....                 | 33  | Medical School of South Carolina .....        |
| Charlottesville, Va. .... | 34  | University of Virginia .....                  |
| Chicago, Ill. ....        | 35  | Chicago Academy of Sciences .....             |
| " " .....                 | 36  | Observatory.....                              |
| " " .....                 | 37  | Public Library .....                          |
| Cincinnati, Ohio. ....    | 38  | Observatory.....                              |
| " " .....                 | 39  | Public Library—C. W. Merrill, Librarian ..... |
| " " .....                 | 40  | Zoological Society .....                      |
| " " .....                 | 40½ | Ohio Mechanics Institute .....                |
| Cleveland " .....         | 41  | Kirtland Society of Natural Sciences .....    |
| Clinton, N. Y. ....       | 42  | Observatory .....                             |
| Columbia, S. C. ....      | 43  | University of South Carolina .....            |
| Columbus, Ohio. ....      | 44  | State Library .....                           |
| Davenport, Iowa. ....     | 45  | Academy of Natural Sciences .....             |
| Des Moines, " .....       | 46  | State Library .....                           |
| Dubuque, " .....          | 47  | Iowa Institute of Science and Arts.....       |
| Easton, Pa. ....          | 48  | Pardee Scientific School .....                |



**OF THE PRINCIPAL SCIENTIFIC AND LITERARY INSTITUTIONS IN THE UNITED STATES—**

*continued.*

|                         |     |                                                              |       |
|-------------------------|-----|--------------------------------------------------------------|-------|
| Angow, Mo. ....         | 49  | Observatory.....                                             | O.    |
| Amherst, N. H. ....     | 50  | Dartmouth College.....                                       | U. M. |
| " .....                 | 51  | Observatory.....                                             | O.    |
| Ansburg, Pa. ....       | 52  | State Library .....                                          | L.    |
| Atford, Ct. ....        | 53  | Amer. Philological Association .....                         | S.    |
| " .....                 | 54  | Watkinson Reference Library.....                             | L.    |
| Babson, N. J. ....      | 55  | Stevens Institute of Technology .....                        | T.    |
| Baltimore, Ind. ....    | 56  | Public Library .....                                         | L.    |
| Barnes City, Iowa. .... | 57  | State University.....                                        | U.    |
| Barnes, N. Y. ....      | 58  | Cornell University—W. A. Anthony, Professor of Physics.....  | T. U. |
| Barnes, Mich. ....      | 59  | State Library .....                                          | L.    |
| Barnes, Kans. ....      | 60  | Academy of Science .....                                     | S. M. |
| Barnes, Va. ....        | 61  | School of Civil and Mining Engineering .....                 | T.    |
| Barnesville, Ky. ....   | 62  | Public Library .....                                         | L.    |
| Barnes, Wis. ....       | 63  | State Historical Society .....                               | S. M. |
| " .....                 | 64  | Wis. Acad. of Sciences, Arts and Letters .....               | S. M. |
| Barnes, Ct. ....        | 65  | Wesleyan University.....                                     | M. U. |
| Barnes, Minn. ....      | 66  | University of Minnesota .....                                | U.    |
| Barnes, Tenn. ....      | 67  | State Library .....                                          | L.    |
| Barnes, N. J. ....      | 68  | New Jersey Historical Society.....                           | S.    |
| Barnes, N. J. ....      | 69  | Rutgers Scientific School .....                              | T.    |
| Barnes, Ct. ....        | 70  | Academy of Arts and Sciences .....                           | S.    |
| " .....                 | 71  | American Oriental Society .....                              | S.    |
| " .....                 | 72  | Observatory.....                                             | O.    |
| Barnes, Ct. ....        | 73  | Peabody Museum .....                                         | M.    |
| " .....                 | 74  | Sheffield Scientific School.....                             | T.    |
| Barnes, La. ....        | 75  | Yale College .....                                           | U.    |
| " .....                 | 76  | Academy of Sciences.....                                     | S.    |
| Barnes, N. Y. ....      | 77  | State Library .....                                          | L.    |
| Barnes, N. Y. ....      | 78  | American Geographical Society .....                          | S.    |
| " .....                 | 79  | American Institute.....                                      | S.    |
| " .....                 | 80  | American Institute of Architects .....                       | S.    |
| " .....                 | 81  | Amer. Museum of Natural History .....                        | M.    |
| " .....                 | 82  | American Society of Civil Engineers .....                    | S.    |
| " .....                 | 83  | Astor Library .....                                          | L.    |
| " .....                 | 84  | College of Physicians and Surgeons .....                     | M.    |
| " .....                 | 85  | Columbia College .....                                       | U.    |
| " .....                 | 86  | Cooper Union .....                                           | T.    |
| " .....                 | 87  | Lenox Library .....                                          | L.    |
| " .....                 | 88  | Mercantile Library .....                                     | L.    |
| " .....                 | 89  | Metropolitan Museum of Art .....                             | M.    |
| " .....                 | 90  | New York Academy of Sciences .....                           | S.    |
| " .....                 | 91  | New York Historical Society .....                            | S. M. |
| " .....                 | 92  | New York Society Library .....                               | L.    |
| " .....                 | 93  | New York School of Mines .....                               | T.    |
| Barnes, Ill. ....       | 94  | Illinois Museum of Natural History .....                     | M.    |
| Barnes, Cal. ....       | 95  | University of California .....                               | U.    |
| Barnes, Pa. ....        | 96  | Academy of Natural Sciences .....                            | S. M. |
| " .....                 | 97  | American Philosophical Society .....                         | S.    |
| " .....                 | 98  | Franklin Institute, 15, S. 7th-street—Wm. H. Wahl, Sec. .... | S.    |
| " .....                 | 99  | Library Company of Philadelphia .....                        | L.    |
| " .....                 | 100 | Mercantile Library .....                                     | L.    |
| " .....                 | 101 | Pennsylvania Historical Society .....                        | S.    |
| " .....                 | 102 | University of Pennsylvania .....                             | U.    |
| " .....                 | 103 | Zoological Society of Philadelphia .....                     | M.    |
| Barnes, Pa. ....        | 104 | Mercantile Library.....                                      | L.    |
| Barnes, Me. ....        | 105 | Portland Society of Natural History .....                    | S. M. |
| Barnes, N. J. ....      | 106 | College of New Jersey .....                                  | U. M. |
| " .....                 | 107 | Green School of Science .....                                | T.    |
| " .....                 | 108 | Observatory.....                                             | O.    |
| Barnes, R. I. ....      | 109 | Athenæum .....                                               | L.    |
| " .....                 | 110 | Brown University .....                                       | M. U. |
| Barnes, N. C. ....      | 111 | State Library .....                                          | L.    |
| Barnes, Va. ....        | 112 | State Library .....                                          | L.    |
| Barnes, Mo. ....        | 113 | Mo. School of Mines and Metallurgy.....                      | T.    |
| Barnes, Cal. ....       | 114 | State Library .....                                          | L.    |
| Barnes, Mo. ....        | 115 | Academy of Science .....                                     | S.    |
| " .....                 | 116 | Mercantile Library.....                                      | L.    |
| Barnes, Mass. ....      | 117 | Am. Assoc. for Advancement of Science .....                  | S.    |
| " .....                 | 118 | Essex Institute .....                                        | S. M. |
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| " " .....              | 125 | Army Medical Museum.....                 | M.    |
| " " .....              | 126 | Corcoran Gallery of Art .....            | M.    |
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| " " .....              | 128 | National Academy of Sciences.....        | S.    |
| " " .....              | 129 | Philosophical Society of Washington..... | S.    |
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| 137 Engineer Bureau, War Department. | 151 Navy Department.                |
| 138 Entomological Commission.        | 152 Ordnance Office.                |
| 139 Fish Commission.                 | 153 Patent Office.                  |
| 140 Geological Surveys.              | 154 Post Office Department.         |
| 141 Hydrographic Office.             | 155 Quartermaster General's Office. |
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**COURSES OF ELECTRICAL ENGINEERING:**

Nos. 18, 55, 58.

## A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

**CORNELL UNIVERSITY, ITHACA, N.Y.** The rapid development of the applications of electricity has created a demand for thoroughly trained engineers conversant with electrical science, especially by companies carrying on telegraphy, electric lighting, electrical supply and transmission of power, electroplating, the manufacture of electrical machinery and apparatus, etc. Recognizing this demand, the trustees of Cornell University have established the following **COURSE IN ELECTRICAL ENGINEERING**, to which students will be admitted at the beginning of the next academic year (September 18, 1883). The general studies of the course are mainly those of Mechanical and Civil Engineering, but the special studies embrace the theory of electricity, the methods of electrical measurement, the construction and testing of telegraph lines, cables, and instruments, the theory and construction of dynamo-machines, the methods of electric lighting, and the electrical transmission of power.

**EQUIPMENT.**—The University possesses a very extensive collection of electrical apparatus, including resistance coils, galvanometers, condensers, and other apparatus for measurements, from Elliott Brothers of London, Siemens & Halske of Berlin, and other makers; the special instruments by Deprez, Siemens & Halske, Professors Ayrton and Perry, and Sir William Thomson, for measuring the currents and potentials of dynamo-machines; two large and several small dynamo-machines; electric lamps of several makers; telegraph and telephone instruments; besides magnetometers, dynamometers for measuring power used in driving dynamos, photometers, and other accessory apparatus. Telegraph and telephone lines are available for making tests, and electric light circuits upon the University grounds enable the student to make his experiments under the conditions that obtain in actual practice.

In the new Physical Laboratory every facility is provided for the use of electrical apparatus under the most favorable conditions, and a workshop attached to the laboratory provides for the construction of special instruments for investigations.

**ADMISSION.**—Entrance Examinations. (The Primary Examination for Admission to the University). All candidates for admission, except those provided with certificates or diplomas as specified below, are examined as follows:

1. In *English Grammar*; Whitney's Essentials of English Grammar is the standard. A short composition is required as a test of the candidate's knowledge of spelling, punctuation, the use of capitals, and elementary English construction.

At the option of the candidate the subject for this composition will be assigned by the examiner from one of the books named below, and the knowledge of the subject matter shown will be duly regarded.

In 1883: Shakespeare's Julius Caesar, Bunyan's Pilgrim's Progress, Scott's Ivanhoe, Gray's Elegy.

In 1884: Shakespeare's Coriolanus, Thackeray's Henry Esmond, Irving's Sketch Book, Longfellow's Evangeline.

In 1885: Shakespeare's Merchant of Venice, Scott's Lady of the Lake, Hawthorne's Twice Told Tales, Lowell's Vision of Sir Launfal.

2. In *Geography*, political and physical; as much as is contained in Harper's School Geography, or in Warren's Common School Geography.

3. In *Physiology*; as presented in the smaller text-books upon the subject, exclusive of the nervous system and the names of bones and muscles.

4. In *Arithmetic*, including the metric system of weights and measures; as much as is contained in the larger text-books.

5. In *Plane Geometry*; as much as is contained in the first five books of Chauvenet's Treatise on Elementary Geometry, or in the first five books of Wentworth's Elements of Plane and Solid Geometry, or in the first six books of Newcomb's Elements of Geometry, or in the first six books of Hamblin Smith's Elements of Geometry.

6. In *Elementary Algebra*, through quadratic equations, and including radicals and the theory of exponents; as much as is contained in the first fourteen chapters of Loomis's Treatise on Algebra, or in Olney's Elementary Course in Algebra, or in the first five sections of Robinson's University Algebra, or in the first twenty-six chapters of Hamblin Smith's Elementary Algebra.

In Arithmetic, and in the fundamental operations of Algebra, such as multiplication and division, the management of brackets, the solving of numerical and literal equations of the first and second degree, the combining and simplifying of fractions and radicals, the interpretation and use of negative quantities and of 0 and  $\infty$ , the putting of problems into equation—the student should have distinct notions of the meaning and the reason of all that he does, and be able to state them clearly in his own language; he should also be able to perform all these operations, even when somewhat complex, with rapidity, accuracy, and neatness; and to solve practical problems readily and completely. In his preparatory study he is advised to solve a great many problems, and to state and explain the reasons for the steps taken. In Geometry he should learn the definitions accurately, whether in the language of the text-book or not, and in proving a theorem or solving a problem he should be able to prove every statement made, and to go back step by step till he rests upon the primary definitions and axioms. He should be able to apply the principles of geometry to practical and numerical examples, to construct his diagrams readily, with rule and compass, and to find for himself the solutions of simple problems and the demonstrations of simple theorems. Besides oral recitation he is advised to write out his demonstrations, having equal regard to the matter and to the form of his statements; and when written he may carefully study them to make sure, first, that he has a complete chain of argument, and, secondly, that it is so arranged that without defect or redundancy one step follows as a logical consequence of another.

In place of these examinations certain certificates or diplomas are received as follows:

1. *Certificates* issued by the *Regents of the University of the State of New York* are accepted in place of the examinations in English Grammar, Geography, and Arithmetic.

2. *Certificates* issued by the *Superintendent of Public Instruction of the State of New York*, and *Diplomas* issued by the state normal schools, and by those academies and high schools of the

State of New York whose requirements for graduation have been approved by the Faculty, whose course of study requires Physiology and Plane Geometry, are accepted in place of examinations in all the subjects named above *except Algebra*.

3. *Diplomas* issued by the *Regents* to graduates from the high schools and academies of State of New York are accepted in place of the examinations in all the subjects named above. Candidates must be of good moral character and at least sixteen years of age, or, if woman, *seventeen*.

Examination for Admission to the Several Courses.—The requirements for admission to courses in *Agriculture, Architecture, Civil Engineering, and Mechanic Arts*, are the same as for admission to the University; but for admission to any of the other regular courses of the examinations, in addition to the *Primary Examination*, are as follows:

To the Courses in *Science, Science and Letters, Mathematics, Chemistry and Physics, and Analytical Chemistry*.—In addition to the *Primary Examination*, an examination in any one of the following subjects:

1. In *French*, the principles of French Grammar, the translation of French at sight, translation of English into French, and the equivalent of two of Bôcher's modern French plays and Lacombe's *Petite Histoire du Peuple Français*;

2. In *German*, the whole of Whitney's German Grammar, the translation of German at sight, the translation of English into German, and one hundred pages of Whitney's *Readings* including two of the longer prose extracts or an equivalent;

Any deficiency in the preparatory French or German may be made up, as extra work, reciting with the regular classes in the University.

3. In *Mathematics*, Solid Geometry and Conic Sections, as much as is contained in Newcomb's Elements of Geometry; Advanced Algebra, as much as is contained in Olney's *University Algebra*, or in Newcomb's *Algebra*; and Trigonometry, Plane and Spherical, as much as contained in Wheeler's Elements of Trigonometry, or in the unstarred portions of Oliver, Wallis and Jones' *Treatise on Trigonometry*.

#### COURSE IN ELECTRICAL ENGINEERING.—LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

FRESHMAN YEAR (Fall Term).—French or German, 5; rhetoric, 2; geometry and conic sections, 5; freehand drawing, 3; military drill, 2; hygiene, six lectures. (Winter Term).—French or German, 5; rhetoric, 2; algebra, 5; freehand drawing, 3; geometrical drawing (Spring Term).—French or German, 5; trigonometry, 5; descriptive geometry, text and drawing, 4; rhetoric, 2; military drill, 2.

SOPHOMORE YEAR (Fall Term).—French or German, 3; analytical geometry, 5; experimental mechanics and heat, 3; descriptive geometry, text and drawing, 6; military drill, 2. (Winter Term).—French or German, 3; calculus, 5; electricity and magnetism, 3; chemistry, lectures 3; shop-work, 3. (Spring Term).—Calculus, 5; acoustics and optics, 3; chemistry, lectures 3; mechanical drawing, 3; shop-work, 3; military drill, 2.

JUNIOR YEAR (Fall Term).—Calculus, 5; physics, laboratory work (mechanics, measurement 3; chemistry, laboratory work, 3; mechanism, 3; shop-work, 3. (Winter Term).—Mechanics of engineering, 5; physics, laboratory work (electricity, general experiments), 3; chemistry, laboratory work, 3; mechanism, 3; shop-work, 3. (Spring Term).—Mechanics of engineering, 5; physics, laboratory work (acoustics and optics), 5; chemistry, laboratory work, 3; mechanical drawing, 3.

SENIOR YEAR (Fall Term).—Mechanics of engineering, 5; physics, lectures and laboratory work (testing of instruments and determinations of constants), 6; steam-engine, 3; mechanical drawing, 3. (Winter Term).—Physics, lectures and laboratory work (dynamo-machines, electrical motors, tests of efficiency), 5; steam-engine, 3; hydraulics, 5; mechanical drawing, 4; military science, 2. (Spring Term).—Physics, lectures and laboratory work (photometer tests of electric lamps, telegraph instruments, telegraph lines, and cables), 9; mechanical drawing, 3; preparation of thesis.

#### UNITED STATES MILITARY ACADEMY, WEST POINT, N. Y. Department

of Natural and Experimental Philosophy.—PETER S. MICHIE, Ph. D., Professor (14th Feb. 1871). Captain Clinton B. Sears, A. B., Corps of Engineers, Assistant Professor (Relieved April 13th, 1882); 1st Lieutenant Ezra B. Fuller, 7th Cavalry, Assistant Professor (since April 13th, 1882); 1st Lieutenant Arthur Murray, 1st Artillery (acting Assistant Professor). Department of Civil and Military Engineering.—JUNIOUS B. WHEELER, Professor, Brevet Colonel U.S.A. (16th Sept., 1871). 1st Lieutenant Willard Young, Corps of Engineers (Assistant Professor); 1st Lieutenant Solomon W. Roessler, Corps of Engineers (acting Assistant Professor). Department of Mathematics.—EDGAR W. BASS, Professor (17th April, 1871). 1st Lieutenant John T. Honeycutt, 1st Artillery, Assistant Professor (to be relieved from duty at the Military Academy, Aug. 28, 1882); 1st Lieutenant William M. Medcalf, Ordnance Department, 1st Lieutenant William Crozier, Ordnance Department, 2nd Lieutenant Henry Ludlow, 3rd Artillery, 2nd Lieutenant Solon F. Massey, 5th Artillery (to be relieved from duty at the Military Academy, Aug. 28, 1882); 2nd Lieutenant Douglas A. Howard, 3rd Artillery, 2nd Lieutenant James E. Runcie, 1st Artillery (acting Assistant Professor). Department of Chemistry, Mineralogy, and Geology.—SAMUEL E. TILLMAN, Professor (21 Dec. 1880). 1st Lieutenant John P. Wisser, 1st Artillery, Assistant Professor (to be relieved from duty at the Military Academy, Aug. 28, 1882); 1st Lieutenant Joseph S. Orster, 1st Artillery (to be relieved from duty at the Military Academy, Aug. 28, 1882); 2nd Lieutenant Louis A. Lovering, 4th Infantry (acting Assistant Professors); 1st Lieutenant William M. Medcalf, Ordnance Department (on temporary duty). Department of Practical Military Engineering.—Military Signaling, and Telegraphy.—Captain WILLIAM S. STANTON, Corps of Engineers, Instructor. 1st Lieutenant Henry S. Taber, Corps of Engineers (to be relieved from duty at the Military Academy, Aug. 28, 1882) Assistant Instructor; Antoné Lorentz (Master of Artillery).



**WAR DEPARTMENT, OFFICE OF THE CHIEF SIGNAL OFFICER,  
WASHINGTON CITY.**

No. 1.

| NAME.                        | RANK.                                                              | POST OR STATION.                                                                                             |
|------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. WILLIAM B. HAZEN .....    | Brig. & Bvt. Maj.-<br>Genl., Chief Sig.<br>Officer, U.S. Army      | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 2. JAMES W. POWELL, jr. .... | Capt. 6th Inftry.,<br>Acting Sig. Officer                          | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 3. WILLIAM H. CLAPP .....    | Capt. 16th Inftry.,<br>Acting Sig. Officer                         | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 4. GEORGE T. OLMSTED .....   | Capt. U.S. Army,<br>Acting Sig. Officer                            | Prescott, Ariz.                                                                                              |
| 5. SAMUEL M. MILLER .....    | Capt. 5th Arty.,<br>Acting Sig. Officer                            | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 6. JOHN P. STORY .....       | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 7. RICHARD P. STRONG .....   | 1st Lieut. 4th Arty.,<br>Bvt. Capt. U.S.A.,<br>Acting Sig. Officer | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 8. H. H. C. DUNWOODY ....    | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 9. ROBERT CRAIG .....        | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 10. LOUIS V. CAZIARC .....   | 1st Lieut. 2nd Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 1. CHAS. E. KILBOURNE ....   | 1st Lieut. 2nd Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 2. Adolphus W. Greeley ....  | 1st Lieut. 5th Cav<br>Acting Sig. Officer                          | Lady Franklin Bay, Grinnell Land (in com-<br>mand of expedition).<br>Fort Myer, Virginia.                    |
| 3. FREDERICK K. WARD ....    | 1st Lieut. 1st Cav<br>Acting Sig. Officer                          | Point Barrow, Alaska (in command of expedi-<br>tion).                                                        |
| 4. P. HENRY RAY .....        | 1st Lieut. 8th Inftry.,<br>Acting Sig. Officer                     | Office of Chief Sig. Officer, Washington, D.C.<br>(in command of relief expedition to Lady<br>Franklin Bay). |
| 5. ERNEST A. GARLINGTON ..   | 1st Lieut. 7th Cav.,<br>Acting Sig. Officer                        | Bismarck, Dak.                                                                                               |
| 6. CHARLES A. BOOTH .....    | 1st Lieut. 7th Inftry.,<br>Acting Sig. Officer                     | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 7. THOMAS M. WOODRUFF ..     | 1st Lieut. 5th Inftry.,<br>Acting Sig. Officer                     | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 8. JAMES ALLEN .....         | 1st Lieut. 3rd Cav<br>Acting Sig. Officer                          | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 9. JAMES B. LOCKWOOD .....   | 1st Lieut. 23rd Inf.<br>Acting Sig. Officer                        | Lady Franklin Bay, Grinnell Land.                                                                            |
| 10. FREDK. F. KISLINGBURY .. | 2nd Lieut. 4th Inf.<br>Acting Sig. Officer                         | Lady Franklin Bay, Grinnell Land.                                                                            |
| 1. JAMES A. SWIFT .....      | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |
| 2. LEROY E. SEEBREE .....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | San Antonio, Texas.                                                                                          |
| 3. JOSEPH S. POWELL .....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 4. WILLIAM A. GLASSFORD ..   | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Leavenworth, Kansas.                                                                                         |
| 5. WILLIAM D. WRIGHT ....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 6. FRANK GREENE .....        | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Dayton, Washington, D.C.                                                                                     |
| 7. ROBERT B. WATKINS ....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |
| 8. JOHN C. WALSH .....       | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |

WAR DEPARTMENT, No. 2.

LIST OF U.S. MILITARY TELEGRAPH LINES OPERATED AND CONTROLLED BY THE SIGNAL SERVICE U.S. ARMY SHOWING NUMBER OF STATIONS AND MILES OF WIRE IN EACH SECTION.

I. WASHINGTON AND IDAHO DIVISION.

| STATION.               | STATE.          | MILES. |
|------------------------|-----------------|--------|
| Tatoosh Island .....   | Wash. Ter. .... | 80     |
| Neah Bay .....         | " .....         |        |
| Hoko .....             | " .....         |        |
| Pisht .....            | " .....         |        |
| Crescent Bay .....     | " .....         |        |
| Port Angeles .....     | " .....         | 68     |
| Dayton .....           | Wash. Ter. .... |        |
| Lewiston .....         | Idaho .....     |        |
| St. Lapwai .....       | " .....         |        |
| St. Spokane .....      | Wash. Ter. .... |        |
| Spokane Falls .....    | " .....         | 91     |
| St. Cœur d'Alene ..... | Idaho .....     |        |
| Astoria .....          | Oregon .....    | 28     |
| St. Stevens .....      | " .....         |        |
| St. Canbre .....       | Wash. Ter. .... |        |

II. OREGON DIVISION.

|                      |            |     |
|----------------------|------------|-----|
| St. Bidwell .....    | Cal. ....  | 234 |
| Loftons Rancho ..... | Oreg. .... |     |
| St. Klamath .....    | " .....    |     |
| Ashland .....        | " .....    |     |

III. NORTH-WEST DIVISION.

|                        |            |     |
|------------------------|------------|-----|
| St. Maginnis .....     | Mont. .... | 315 |
| Poplar River .....     | " .....    |     |
| St. Buford .....       | Dak. ....  |     |
| Glendive .....         | Mont. .... |     |
| Bismarck .....         | Dak. ....  | 55  |
| St. Yates .....        | " .....    |     |
| St. Bennett .....      | Dak. ....  | 4   |
| St. Sully .....        | " .....    |     |
| Deadwood .....         | Dak. ....  | 15  |
| St. Meade .....        | " .....    |     |
| St. Custer .....       | Mont. .... | 30  |
| Terry's Landing .....  | " .....    |     |
| St. Assinniboine ..... | Mont. .... | 206 |
| St. Benton .....       | " .....    |     |
| St. Shaw .....         | " .....    |     |
| Helena .....           | " .....    |     |
| St. Sisseton .....     | Dak. ....  | 23  |
| Webster .....          | " .....    |     |
| St. Totten .....       | Dak. ....  | 68  |
| Larimore .....         | " .....    |     |

IV. DEPARTMENT OF THE MISSOURI.

|                      |                |     |
|----------------------|----------------|-----|
| Dodge City .....     | Kans. ....     | 430 |
| Fort Supply .....    | Ind. Ter. .... |     |
| Cantonment .....     | " .....        |     |
| Fort Reno .....      | " .....        |     |
| Fort Sill .....      | " .....        |     |
| Henrietta .....      | Texas .....    | 121 |
| Fort Elliott .....   | " .....        |     |
| Fort Stanton .....   | N. Mex. ....   |     |
| Fort Craig .....     | " .....        |     |
| San Marcial .....    | " .....        |     |
| Fort Union .....     | N. Mex. ....   | 9   |
| Watrous .....        | " .....        |     |
| Fort Lewis .....     | Cal. ....      | 15  |
| Durango .....        | " .....        |     |
| Uncompahgre .....    | Cal. ....      | 8   |
| Montrose .....       | " .....        |     |
| Fort Wingate .....   | " .....        | 3   |
| Wingate .....        | " .....        |     |
| Fort Bridger .....   | Wyo. ....      | 119 |
| Fort Thornbury ..... | Utah .....     |     |

# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## WAR DEPARTMENT, No. 2—continued.

### CALIFORNIA AND ARIZONA DIVISION.

| STATE.                 | STATION.     | MILES.    |
|------------------------|--------------|-----------|
| Fort Verde .....       | Ariz. ....   | 227       |
| Prescott .....         | " .....      |           |
| Wickenburg .....       | " .....      |           |
| Phoenix .....          | " .....      |           |
| St. McDowell .....     | " .....      |           |
| Maricopa .....         | " .....      | 220       |
| St. Apache .....       | Ariz. ....   |           |
| St. Thomas .....       | " .....      |           |
| San Carlos .....       | " .....      |           |
| St. Grant .....        | " .....      |           |
| Wilcox .....           | " .....      | 60        |
| St. Bowie .....        | " .....      |           |
| St. Bayard .....       | N. Mex. .... |           |
| St. Cummings .....     | " .....      |           |
| Florida Station .....  | " .....      |           |
| Tucson .....           | Ariz. ....   | 7 Teleph. |
| St. Lowell .....       | " .....      | line.     |
| Huachuca Station ..... | Ariz. ....   | 7 Teleph. |
| St. Huachuca .....     | " .....      | line.     |

### TEXAS DIVISION.

|                       |             |     |
|-----------------------|-------------|-----|
| Fort Stockton .....   | Texas ..... | 70  |
| Fort Davis .....      | " .....     |     |
| Maria .....           | " .....     | 100 |
| Rio Grande City ..... | Texas ..... |     |
| Brownsville .....     | " .....     | 45  |
| Coleman .....         | Texas ..... |     |
| St. Coucho .....      | " .....     |     |

TOTAL MILES, 2660

**UNITED STATES NAVAL ACADEMY.** Steam Engineering.—CHIEF ENGINEER E. FARMER, Head of Department; Passed Assistant Engineer W. A. Windsor, Passed Assistant Engineer J. S. Ogden, Passed Assistant Engineer G. B. Ransom, Passed Assistant Engineer J. K. Barton, Assistant Engineer W. M. Parks. Mechanics and Applied Mathematics.—Professor J. M. RICE, S. B., Ph. D., Head of Department; Lieutenant-Commander S. H. Baker, Lieutenant H. Knox, Professor W. W. Johnson, A. M. (Assistants). Physics and Chemistry.—Professor H. D. TODD, Head of Department; Lieutenant E. P. Wood, Lieutenant J. B. Murdock, Professor N. M. Terry, A. M., Ph. D., Professor C. E. Munroe, S. B. (Assistants); Mathematics.—Professor W. W. HENDRICKSON, Head of Department; Lieutenant Asa Walker, Lieutenant C. S. Sperry, Lieutenant J. P. Merrell, Lieutenant H. W. Schaefer, Master T. B. Howard.

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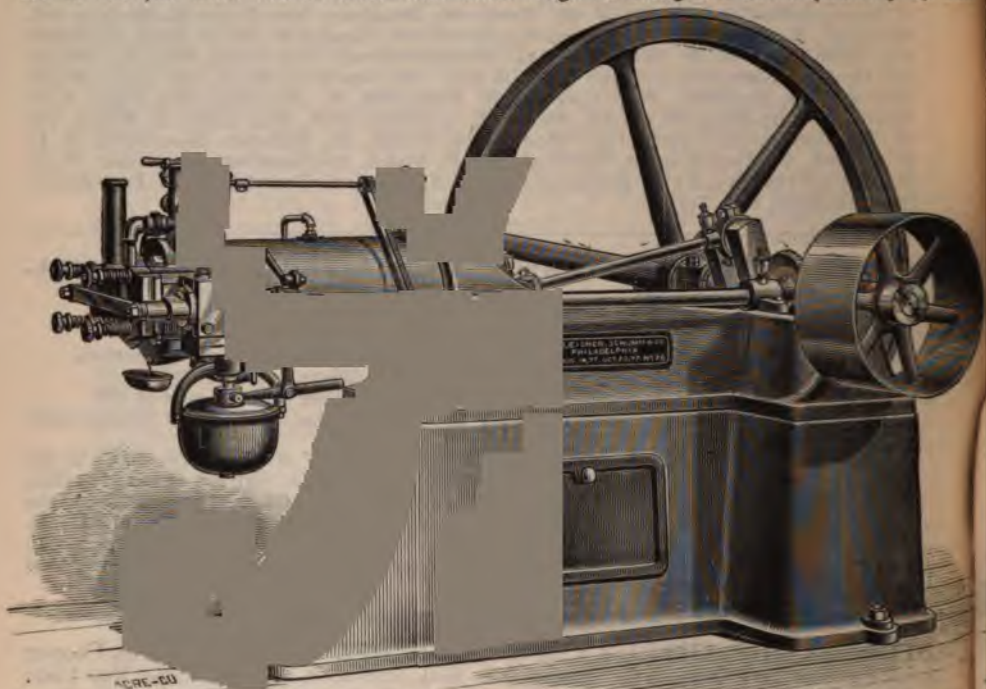
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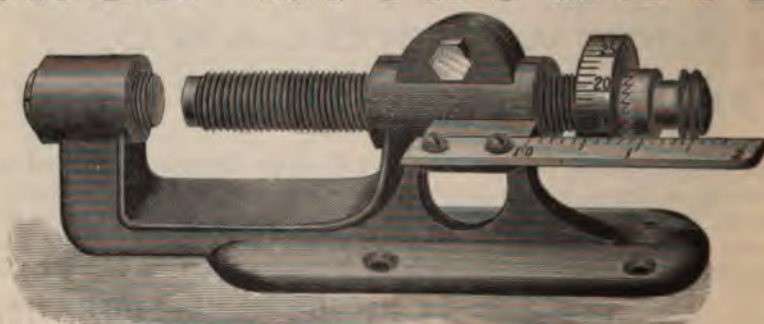
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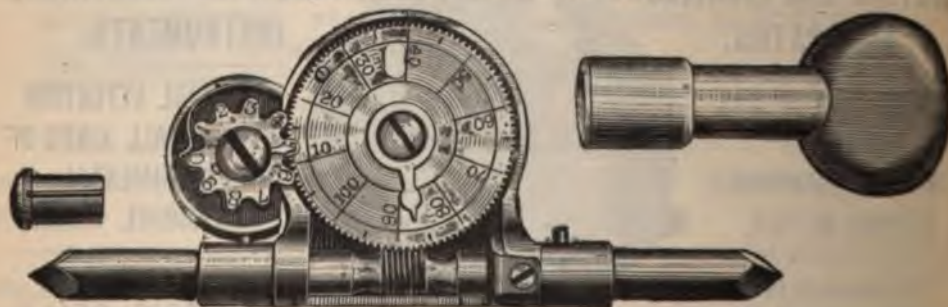


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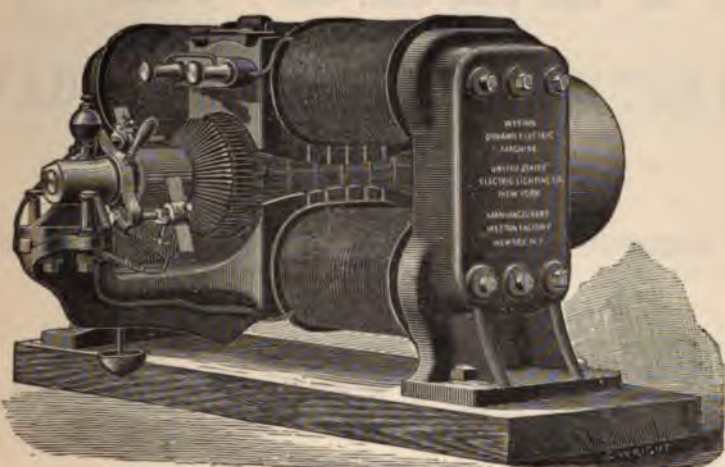
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# PRÉFACE.

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Au moment de présenter la troisième Édition de L'ANNUAIRE UNIVERSEL D'ÉLECTRICITÉ à la confrérie scientifique et au public en général, nous saisissons l'opportunité pour expliquer les modifications importantes que nous avons apportées à l'Édition précédente. Les soins les plus attentifs ont été apportés à la compilation, de manière à donner, autant que cela était possible, satisfaction à différentes manières de voir de tous les intéressés.

Les sections Anglaise, Américaine et Continentale ont été disposées de manière à pouvoir être vendues séparément.

Les listes de professions ont été revisées, et condensées avec soin. Dans la portion Britannique, les sections de professions de Londres et de la province ont été réunies en une seule ; et il s'est trouvé indispensable, étant donné l'augmentation sérieuse des affaires purement électriques, d'éliminer une grande partie des professions qui s'y rapportaient le plus indirectement.

La section Américaine contient de nombreuses et importantes additions ainsi qu'une très-grande augmentation dans le nombre des adresses.

La section Française dans laquelle est comprise la Belgique, a subi l'addition d'une liste alphabétique.

Rien n'a été négligé pour rendre cette Édition aussi correcte et intelligente que possible ; nous regrettons que beaucoup de personnes, soit dans la partie professionnelle, soit dans la partie commerciale, ne puissent pas trouver le temps de corriger et nous retourner nos circulaires. Tous ceux dont le nom figure dans la seconde Édition, et toutes les nouvelles maisons et industries, dans les différents pays, ont reçu au moins une circulaire par la poste ; la plus grande proportion d'entre eux ont reçu une visite personnelle ; et ceux dont le nom se trouvera ou incorrectement désigné n'auront à s'en prendre qu'à eux mêmes pour avoir manqué d'accomplir une formalité bien simple.

D'autre part, nous remercions sincèrement beaucoup de nos souscripteurs et correspondants pour les renseignements valables qu'ils ont bien voulu nous communiquer ce qui n'a pas peu contribué à l'exactitude de l'ouvrage que nous avons maintenant le plaisir de placer devant le public.

J. A. BERLY,

LONDRES, 31 Décembre, 1883.

C.E., A.S.T.E., &c

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**Domont**, G. et Collett, amiante, boul. Magenta, 124, Paris.  
**Dopf**feld, tréfileries de fils d'acier, etc., rue des Tournelles, 52, Paris.  
**Dorison** et fils, tourneurs en métaux, rue St. Sabin, 58, Paris.  
**Doucc** et Cie., électricité appliquée aux sciences, rue de Rivoli, 116, Paris.  
**Doulton** et Cie., vases en grès, rue Paradis, 6, Paris.  
**Drault**, argenteur et doreur, boul. Richard Lenoir, 102, Paris.  
**Dronier**, P., allumeurs et extincteurs électriques, rue des Fêtes, 63, Belleville, Paris.  
**Dubos**, Ch., appareils électro médicaux, avenue de la Motte Piquet, 41, Paris.  
**Duboscq**, J. et A., lumière électrique, rue de l'Odéon, 21, Paris.  
**Duboscq**, père et fils, électriques et régulateurs, rue des Fossés, St. Jacques, 11, Paris.  
**Duboscq**, Jules, lumière électrique, rue Monsieur-le-Prince, 30, Paris.  
**Dubourguet**, A., tourneur en métaux, boul. Magenta, 33, bis, Paris.  
**Duchemin**, appareils servant aux mesures électriques, rue Claperton, 25, Paris.  
**Duchesne**, Fournet, lumière électrique, Le Breuil-en-Auge, Calvados.  
**Ducommun**, éclairage électrique, boul. Magenta, 18, Paris.  
**Ducouso** frères, ingénieurs électriciens, rue Vanneau, 82, Paris.  
**Ducrotet** E. et Cie., appareils servant aux mesures électriques, rue Claude Bernard, 75, Paris.  
**Dureau**, argenteur et doreur, rue Chapon, 4, Paris.  
**Dufort**, H., matériel de lignes télégraphiques, rue Saint Charles, 77, Paris.  
**Dufoulet** et Regnier, nickelateurs et nickelure, rue Portefoin, 2, Paris.  
**Dufour**, jeune et fils, courroies de transmission, rue St. Pierre de Vaise, 34, Lyon.  
**Dumas**, E. et Cie., courroies de transmission, rue de la République, 80, Marseille.  
**Dumoulin**-Froment, appareils servant aux mesures électriques, rue Notre Dame des Champs, 85, Paris.  
**Dunon**, A., plomb, faub. St. Martin, 33, Paris.  
**Duploy**, E. éclairage électrique, avenue de la Motte Piquet, 6, Paris.  
**Dupuis**, F., fils (Verrerie de la Grasse Mouche), verreries et vases pour, chimistes et électriciens, rue Chercell, 16, Marseilles.  
**Dupont** et Alker, argentiers et doreurs, Haeren, Bruxelles, Belgique.  
**Dupré**, G. (successeur d'Andriveau), appareils servant aux mesures électriques, rue Campagne Première, 5, Paris.  
**Durand**, Geo. (J. Roher, succr.) argentier et doreur, rue des Gravilliers, 75, Paris.  
**Duterne**, Ch., appareils électriques, rue Blainville, 11, Paris.  
**Dutrou**, instruments pour la physique et la chimie, boul. St. Germain, 94, Paris.

## E.

- Eastern Telegraph Company, Limited**, rue Caumartin, 28, Paris ; Marseille et Londres.  
**Eberlin**, Ph., platine, rue du Caire, 43, Paris.  
**Ecole de Physique et Chimie Industrielles**, au collège Rollin, Paris.  
**Ecole d'Horlogerie**, Faubourg du Temple, 99, Paris.  
**Ecole Supérieure de Télégraphie**, au Ministère des Postes et Télégraphes, rue de Grenolle, 99 à 103, Paris.  
**Edison**, électricité appliquée à l'industrie, etc., avenue de l'Opéra, 33, Paris.  
**Edoux**, tubes et tuyaux, rue Lecourbe, 72 à 78, Paris.  
**Encausse** et Canesie, appareils électro médicaux, rue Rochechouart, 57, Paris.  
**Engel**, A., allumeurs et extincteurs électriques, rue de Seine, 72, Paris.  
**Esquerré-Caballé**, matériel de lignes télégraphiques, avenue des Champs Elysées, 28, Paris.  
**Estève**, A., piles et moteur électrique, à la Réole, Gironde.  
**Estienne**, appareils servant aux mesures électriques, boul. de Vaugirard, 132, Paris.  
**Estienne**, Edouard, ingénieur électricien, rue Nollet, 17, Paris.

## F.

- FAIRMAN, JAMES F.**, Inventor's Institute, Cooper Union, New York City, N.Y. Tout ce qui a rapport à l'Electricité. On est prié de correspondre.  
**Falcke** et Cie., nickel, passage des Petites-curies, 20, Paris.  
**Fameselle-Lavignerie**, courroies de transmission, Amiens.  
**Farcot**, Joseph, machines à vapeur, av. de la Gare, 13, St. Ouen, Paris.  
**Fasse**, J., paratonnerres, rue de l'Hôtel de Ville, 12, Lyon.  
**Faucon** frères, phares, rue de la Douane, 24 et quai de Valmy, 41, Paris.  
**Faure Electrical Accumulator Co.**, avenue de l'Opéra, 5, Paris.  
**Faure** et Cie., tubes et tuyaux, rue Buffaut, 26, Paris.  
**Faure** et Gautier, J. B. fils, plomb, rue Grégnan, 65, Marseille.  
**Faure** et Kessler, platine, Clermont-Ferrand.  
**Faure**, Cadet, courroies de transmission, rue François Dauphin, 4, Lyon.  
**Feil**, instruments pour la physique et la chimie, rue Lebrim, 30, Paris.  
**Félix**, C., ingénieur électricien, rue St. Lazare, 28, Paris.  
**Félix**, Hunebello, courroies de transmission, rue Chaussée St. Pierre, 17, Amiens.  
**Felten** et Guillaume, télégraphie, rue des Bourdonnais, 30, Paris.



Feneux et Pelletier, téléphones et microphones, rue Montmartre, 99, Paris.  
 Feraud, V. M., batteries électriques, rue d'Alésia, 121, Paris.  
 Fernique, ingénieur électricien, rue de Fleurus, 31, Paris.  
 Ferron, Alex., outils pour électriciens, rue des Gravilliers, 11, Paris.  
 Festugière, tubes et tuyaux, rue du Terrage, 4 Paris.  
 Feuillet, D. Frères, cylindres en verre, rue des Guillemettes, 3 à 7, Paris.  
 Feunquères, J., appareils électro médicaux, rue de Sèvres, 89, Paris.  
 Fichet, A., électricité appliquée à l'industrie, &c., rue des Martyrs, 19, Paris.  
 Filliot, I., sonneries et signaux électriques, rue de Courcelles, 15, Paris.  
 Fischer et Cie., caoutchouc et gutta percha bruts, rue de la Verrerie, 43, Paris.  
 Flechet, L. et Cie., poteaux télégraphiques en fer, rue Lairesse, Liège.  
 Flogny, E. F. L., moteurs électriques, rue Lemerrier, 81, Paris.  
 Folie et Denamur, nickeleurs et nickelure, Quai Jemmapes, 82, Paris.  
 Follain, modèles, rue du Chemin-Vert, 121, Paris.  
 Fondu, J. B., argenteur et doreur, à Vilvorde, Belgique.  
 Fontaine, verre soufflé pour électro chimie rue Monsieur le Prince, 18, Paris.  
 Fontaine, Fourmont, vis, bornes, serre fils rue du Grenier-St.-Lazare, 11, Paris.  
 Fontaine, H., éclairage électrique, rue Drouot, 15, Paris.  
 Fontenilles, V., électricité appliquée à l'industrie, &c., boul. Haussmann, 38, et Chaussée d'Antin,  
 Forges, Fonderies et Acieries Nationales, fils d'acier, rue de Javel, 35, Paris.  
 Fortein, J. H., électricité appliquée aux sciences, &c., rue de Varennes, 27, Paris.  
 Fosse, appareils électro médicaux, rue de l'Hôtel-de-Ville, 12, Lyon.  
 Franck, zinc (mines et usines), avenue de Versailles, 6, Paris.  
 François, J., courroies de transmission, rue Nationale, 247, Lille.  
 François, Labbé, tubes et tuyaux, boul. Richard Lenoir, 52, Paris.  
 Frayssinier, J., ingénieur électricien, boul. Sébastopol, 97, Paris.  
 Frenais, A., argenteur et doreur, boul. Richard Lenoir, 77, Paris.  
 French Electrical Power Storage Co., machines dynamo électriques, avenue de l'Opéra, 5, Paris.  
 Frezoul, sonneries et signaux électriques, rue de Thorigny, 11, Paris.  
 Frion et Thierry, isolateurs, rue du Roi-de-Sicile, 50, Paris.

## G.

Gadot, Paul, ingénieur électricien, rue de Montreuil, 82, Paris.  
 Gagneau et Cie., bronzes et appareils pour lumière électrique, rue Lafayette, 115, Paris.  
 Gaiffe et Darlot, électricité appliquée à la médecine aux arts, &c., Hotel de Ville, 13, Lyon.  
 Gaiffe (Lad-ad), nickeleur et nickelure, rue St. André des Arts, 40, Paris.  
 Gaillet et Huet, ingénieurs électriciens, place Richelieu, 7, Lille.  
 Galante, H., et Cie., ébonite et volcanite, rue de l'Ecole de Médecine, 2, Paris.  
 Gallais, A., électricité appliquée aux sciences, &c., boul. de la Villette, 73, Paris.  
 Gallet, Victor, coffre-forts à sonneries électriques, boul. Magenta, 60, Paris.  
 Gallien et Charton, courroies de transmission, quai de la Charité, 2, Lyon.  
 Gandillot et Cie, tubes et tuyaux, rue des Vinaigriers, 37 et 38, Paris.  
 Garnier, amiante, rue Hauteville, 18 bis, Paris.  
 Garnier, H., nickeleur et nickelure, rue Morère, 15 bis, Paris.  
 Garnier, P., sonneries et signaux électriques, rue Taitbout, 6 et 16, Paris.  
 Gary, horlogerie électrique, rue Sainte Eugénie, 22, Paris.  
 Gaspard et Belle, nickel, rue de Saintonge, 62, Paris.  
 Gatine, L., mercure, rue des Rosiers, 23, Paris.  
 Gaubret, P. T., télégraphie, rue de Grenelle, 10, Paris.  
 Gaulard, L., piles électriques, rue Nollet, 65, Paris.  
 Gautier, E., sonneries et signaux électriques, rue de Varennes, 64, Paris.  
 Gautier, P., moteurs électriques, Montfort l'Amaury (Seine-et-Oise).  
 Gautier (Vve.), bains électriques, rue Sévigné, 11, Paris.  
 Gautret, galvanoplastie, avenue du Maine, 175, Paris.  
 Geoffroy, H., matériel de lignes télégraphiques, rue de l'Ermitage, 50, Paris.  
 Geoffroy, H., téléphones et microphones, rue des Récollets, 71, Paris.  
 Geneste, Herscher et Cie., moteurs électriques, rue du Chemin Vert, 42, Paris.  
 Géraudy, F., ingénieur électricien, Paris.  
 Gérard et Cie., nickeleurs et nickelures, rue Charlot, 62, Paris.  
 Gérard (aux maison Nicolle), argenteur et doreur, rue Turbigo, 7, et boul. Voltaire, 41, Paris.  
 Gérard, A., machines magnéto électriques et dynamo électriques, passage Cottin, 8, Paris.  
 Gérard, A. J., téléphone et microphone, place St. Lambert, 5, Liège, Belgique.  
 Germain, P., matériel de lignes télégraphiques, Clermont-Ferrand, Paris.  
 Gerard (Vve.), caoutchouc et gutta percha bruts, quai Jemmapes, 108, Paris.  
 Gorbez, appareils électro-médicaux, rue des Ecoles, 52, Paris.  
 Gerteis, R., sonneries et signaux électriques, rue Rochechouart, 17, Paris.  
 Gettiffe et Simon, instruments pour la physique et la chimie, rue du Turbigo, 87, Paris.  
 Geyter, G. de, ingénieur électricien, Mouscron, Belgique.  
 Giesbers, moteurs électriques, rue de la Bonté, 5, Bruxelles.  
 Gignou, paratonnerres, rue St. Ferdinand, Ternes, 6, Paris.  
 Gilbert, zinc, rue Ste. Croix de la Bretonnerie, 20, Paris.  
 Girard et Cie., lampes électriques et régulateurs, boul. Henry IV., 44, Paris.



uckeleur et nickelure, faub. St. Martin, 78, Paris.  
 F., piles et batteries électriques, rue des Batignolles, 80, Paris.  
 E., machines magnéto et dynamo, rue de Paris, 19, Clichy.  
 machines magnéto électriques et dynamo électriques, rue de la Gaîté, 4, Paris.  
 r (A.), appareils servant aux mesures électriques, avenue d'Avroy, 70, bis. Liège, Belgique.  
 me.), baigns électriques, boul. Sébastopol, 77, Paris.  
 t Contenau, platine (affineurs et fabricants), rue du Bouloi, 7, Paris.  
 piles électriques, av. d'Eylau, 172, Paris.  
 boussoles, faub. St. Martin, 62, Paris.  
 t et Cie., maillechort, rue des Marais, 66, Paris.  
 , F., brevets d'invention, cours Morand, 36, bis. Lyon.  
 , Charles R., éclairage électrique, boul. des Capucines, 35, Paris.  
 ., jouets électriques, rue Pigalle, 24, Paris.  
 r, Silv., ingénieur électricien, quai Jemmapes, 166, Paris.  
 l, R. et Cie., caoutchouc, faub. St. Martin, 76, Paris.  
 r, électricité appliquée aux sciences, etc., rue Michel Lecomte, 23, Paris.  
 x, A., instruments pour la physique et la chimie, rue de Bellechasse, Paris.  
 ert, instruments pour la physique et la chimie, boul. du Temple, 17, Paris.  
 A. (T. Mercier, successeur), caoutchouc, boul. Magenta, 31, Paris.  
 Perin Grados, successeur), paratonnerres, boul. Richard Lenoir, 106, Paris.  
 Zen, ingénieur électricien, rue Oberkampf, 63, Paris.  
 Compagnie des Télégraphes du Nord, rue d'Antin, 3, Paris.  
 ye., nickelleur et nickelure, rue Portefoin, 9, Paris.  
 les, électricien, avenue de Lowendall, 5, Paris.  
 les, matériel de lignes télégraphiques, rue de Bellechasse, 41, Paris.  
 : Beux, sonneries et signaux électriques, télégraphie, Grenoble.  
 meries et signaux électriques, rue de la Roquette, 75, Paris.  
 ourneurs en métaux, rue Chapon, 21, Paris.  
 t, E., papier bande pour télégraphie, boul. Beaumarchais, 38, Paris.  
 i. M., Persan Beaumont, Seine-et-Oise.  
 . G., aux Vieux Fort Vincennes, Paris.  
 rères, nickelleurs et nickelure, rue du Temple, 114, Paris.  
 ingénieur électricien, rue de Chaillot, 5, Paris.  
 Ed., matériel de lignes télégraphiques, Rue de Lyon, 3, Paris.  
 : et Cie., tubes et tuyaux, quai Jemmapes, 66, Paris.  
 etricité appliquée aux sciences, etc., rue Hippolyte Lebas, 6, Paris.  
 Schmidt, laminoirs, rue Oberkampf, 123, Paris.  
 t Vayer, sonneries et signaux électriques, rue Turpin, 28, Lyon.  
 aint, chappes et pierres pour instruments de précision, rue Neuve Saint Merri, 11, Paris.  
 , E., sonneries et signaux électriques, rue de Clignancourt, 22, Paris.  
 Cie., tubes et tuyaux, rue Basse, 15, Lille.  
 Ch., sonneries et signaux électriques, rue de Naples, 72, Paris.  
 Em., appareils servant aux mesures électriques, rue Montmorency, 5, Paris.  
 F., appareils électro médicaux, rue du Temple, 55, Paris.  
 piles électriques, rue Daguerre, 57, Paris.  
 , Leprince, électricité appliquée aux sciences, etc., rue Montmorency, 67, Paris.  
 os, Marius, matériel de lignes télégraphiques, rue St. Fuscien, 73, Amiens.  
 A., caoutchouc et gutta percha bruts, rue Vivienne, 40, succursale, boul. Sébastopol, 129, Paris.  
 J., caoutchouc, rue Vivienne, 40, Paris.  
 l, J. et Cie., appareils servant aux mesures électriques, rue de Rocroy, 8, Paris.  
 l, P., allumeurs et extincteurs électriques, rue Lafayette, 221, Paris.  
 fils aîné, caoutchouc, rue du Temple, 51, Paris.  
 n, Geor., phosphor bronze, quai Jemmapes, 152, Paris.

## H.

: Pépin Lehallour, isolateurs et fournitures de télégraphie et téléphonie, Vierzon, Cher.  
 l., galvanoplastie, rue Saint Claude, 5, Marais, Paris.  
 ibes et tuyaux, faub. St. Denis, 148, Paris.  
 , H. et Fleutelot A., amiante, quai de Jemmapes, 74, Paris.  
 A., nickelleur et nickelure, rue des Haudriettes, 5, bis Paris.  
 C., tubes et tuyaux, rue de la Verrerie, 58, Paris.  
 Hayet et Lignereux succ.), machines magnéto électriques, dynamo électriques, avenue de la Motte  
 et, 6, Paris.  
 , Van Biema, courroies de transmission, boul. de Strasbourg, 43, Paris.  
 s, électricité appliquée aux sciences, rue Chanoinesse, 24, Paris.  
 nickelleur et nickelure, rue Lafayette, 225, Paris.  
 , Devos D., sonneries et signaux électriques, rue du Nord, 61, Bruxelles.  
 : Lignereux, paratonnerres, av. de la Motte Piquet, 6, Paris.  
 ères et Cie., caoutchouc et gutta percha bruts, rue du Château d'Eau, 20, Paris.  
 i, G. de, ingénieur électricien, avenue de Villiers, 97, Paris.  
 O. et Cie., appareils servant aux mesures électriques, quai des Grands Augustins, 55, Paris.  
 Alb., outils pour électriciens, rue de Montmorency, 36, Paris.

Henry, R., minium, boul. de la Villette, 117, Paris.  
 Henry, Ve. Th., argentateur et doreur, rue Folie Méricourt, 46, Paris.  
 Hequet, télégraphie, rue de Grenelle, 103, Paris.  
 Héricourt frères, tourneurs en métaux, rue de Temple, 117, Paris.  
 Hermendinger, E. fils de cuivre et laiton (fab.), faub. du Temple, 16, Paris.  
 Herz, Cornélius, ingénieur électricien, rue du faub. Montmartre, 10, Paris.  
 Hitier, fils de fer, boul. Ménilmontant, 101, Paris.  
 Hochgesand, I., graisseurs, quai de Jemmapes, 200 et 202, Paris.  
 Hospitalier, E., ingénieur électricien, rue de Bellay, 6, Paris.  
 Houghton, fils d'acier, rue de Marseille, 8, Paris.  
 Houllman frères, jouets électriques, boul. du Temple, 41, Paris.  
 Houzeau, L., ingénieur électricien, rue Rousselet, 11, Paris.  
 Hubin, F., tubes et tuyaux, rue de Turenne, 14, Paris.  
 Hubner, A., manganèse, rue Béranger, 3, Paris.  
 Huguenot et nickelure, passage Ménilmontant, 3, Paris.  
 Huhl, sonneries et signaux électriques, Strasbourg, Alsace-Lorraine.  
 Hulle, Fred. Van, sonneries et signaux électriques, Chaussée d'Anvers, 78, Bruxelles.  
 Hultz, Alph., machines magnéto électriques et dynamo électriques, rue Danville, 18, Paris.  
 Humlot, P. Césaire, machines magnéto électriques et dynamo électriques, rue Saint Charles, 77, Gen  
 Paris.  
 Hurault, Louis, ingénieur électricien, rue Cler, 29, Paris.  
 Huré, amiante, rue Fontaine-au-Roi, 8, Paris.  
 Hurtu et Hautin, moteurs électriques, rue Saint Maur, 54, Paris.  
 Hutchinson, A. et Cie., caoutchouc, rue Hauteville, 1, Paris.  
 Hutinet, J., sonneries et signaux électriques, rue de Chaillot, 20, Paris.  
 Hyvert, sonneries et signaux électriques, rue Confort, 14, Lyon.

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 India Rubber, Gutta Percha and Telegraph Works Co., Limited, caoutchouc et gutta percha bruts, câ  
 et fils isolés, courroies de transmission, boul. Sébastopol, 97, Paris.  
 Isse, H., verreries et vases pour chimistes et électriciens, rue Longue des Capucins, Marseille.  
 Ivernois, Comte d', moteurs à gaz, rue d'Anjou, Saint Honoré, 4, Paris.;

## J.

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 Jacquard, galvanoplastie, rue Mazarine, 48, Paris.  
 Jacquemier, Raoul, appareils servant aux mesures électriques, avenue de Neuilly, 122, Paris.  
 Jacquez, appareils servant aux mesures électriques, rue Bertrand, 26, Paris.  
 Jacquinet et Gripouilleau, sonneries et signaux électriques, Tours.  
 Jamain, L., appareils servant aux mesures électriques, rue d'Hauteville, 30, Paris.  
 Jamelin, V., tréfileur, rue St. Maur, 99, Paris.  
 James, Soc. Ano, téléphones et microphones, rue des Croisades, 14, Bruxelles.  
 Jardin, tubes et tuyaux, rue Oberkampf, 93, Paris.  
 Jarriant et Magne, sonneries et signaux électriques, rue Pierre Charron, 25, Paris.  
 Jarriant jeune, amiante, rue Belidor, 10, Paris.  
 Jaspas, Jos., machines magnéto électriques et dynamo électriques, rue Jousfosse, 12, Liège, Belgique.  
 Joly, horlogerie électrique, rue de la Borde, 13, Tours.  
 Joly, Alp., matériel de lignes télégraphiques, rue du Cherche Midi, 19, Paris.  
 Joly, Auguste, horlogerie électrique (const.), Liguell (Indre-et-Loire).  
 Jordery, C., télégraphie (appareils et fournitures de), rue Montaigne, 26, Paris.  
 Jourdan, Th., piles et batteries électriques, rue Thiers, 40, Marseille.  
 Journaux, J., téléphones, rue des Cévennes, 56, Paris.  
 Jouselin, P., ingénieur électricien, Paris.  
 Jowa, fils de fer, rue Grétry, 149, Liège, Belgique.  
 Julien, L. et Cie., machines à vapeur, boul. de la Villette, 153, Paris.

## K.

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 Kahn et Schumann, instruments pour la physique et la chimie, rue Lanery, 39, Paris.  
 Kastner, instruments de musique électriques, rue de Clichy, 43, Paris.  
 Kayer, L. Représ de la Cie. d'Hanovre, ébonite et volcanite, rue des Petites, Écuries, 11, Paris.  
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**L.**

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 Lacroix et Lamy, argentiers et doreurs, rue de Bondy, 36, Paris.  
 Lagriffoul, nickelleur et nickelure, rue Charlot, 62, Paris.  
 Lagré, L., nickelleur et nickelure, rue Chapon, 7, Paris.  
 Laigne, W., ingénieur électricien, boul. d'Enfer, 219, Paris.  
 Lallier, V. et Cie., piles électriques, rue de Buffon, 23, Paris.  
 Lampe Maxim (de Kabath rept.), lampes électriques et régulateurs, rue Fortuny, 16, Paris.  
 Lampe-Soleil, (syndicat français de la), machines magnéto électriques et dynamo électriques, avenue de Wagram, 42, Paris.  
 Lampe Swan (G. Simon, représ), lampes électriques et régulateurs, rue Charlot, 85, Paris.  
 Landry, nickelleur et nickelure, rue Pastourelle, 5, Paris.  
 Lange, F. A., maillechort, boul. Voltaire, 1, Paris.  
 Lape, outils pour électriciens, rue Oberkampf, 143, Paris.  
 Lapeinte, G., électricité appliquée à l'industrie, &c., rue St. Sébastien, 9, Paris.  
 Larcher, caoutchouc, rue d'Aboukir, 7, Paris.  
 Larmenjat, J., moteurs électriques, rue Chauveau-Lagarde, 18, Paris.  
 Lasclannes, Ant., ingénieur électricien, rue des Rosiers, 42, Paris.  
 Lattuada, J., appareils servant aux mesures électriques, quai d'Asnières, 77, Villeneuve-la-Garenne.  
 Laurent frères, tubes et tuyaux, quai Pierre Scéze, 14, Lyon.  
 Laurent, électricité appliquée à l'industrie, &c., rue de l'Odéon, 21, Paris.  
 Laurent, H., manganèse rue des Rosiers, 3, ter Paris.  
 Lausberg, G., électricité appliquée à l'industrie, &c., rue Pastourelles, 32 et 34, Paris.  
 Lavarielle, tubes et tuyaux, place St. Michel, 3, Lyon.  
 Laveissière et fils, fils de cuivre et laiton (fab.), rue de la Verrerie, 58, Paris.  
 Lavergne, mercure, rue Richard Lenoir, 38, Paris.  
 Laveur et Cie., nickelieurs et nickelure, rue de Neales, 1, Paris.  
 Lavialle, P. fils, caoutchouc et gutta percha bruts, rue Sévigné, 30, Paris.  
 Lavié et Cie., minium, rue du Hautoir, Bordeaux.  
 Laviornay, moteurs à gaz, boul. de la Villette, 234, Paris.  
 Leber, sonneries et signaux électriques rue Dulong, 29, Paris.  
 L'Eclairage électrique Société Anonyme, au Capital de 6,550,000 francs, machines dynamo électriques, 250, rue Lecourbe, Paris.  
 Lebert, instruments de précision, &c., boul. St. Courcelles, 17, Paris.  
 Leblanc, J., articles en ivoire, bois, pour appareils électriques, rue Boutebrie, 14, Paris.  
 Le Brun, électricité appliquée à l'industrie, &c., rue Pastourelles 32 et 34, Paris.  
 Lecherf, G., argentier et doreur, rue Haute, 88, Bruxelles Belgique.  
 Le Chippey, jouets électriques Faub. St. Martin, 64, Paris.  
 Leclanché, piles électriques, rue Fromentin, 9, Paris.  
 Leclerc, E., argentier et doreur, rue Bonaparte, 58, Paris.  
 Le Comte de Douhet, lumière électrique, avenue Marceau, 68, Paris.  
 Lécroix, E., nickelleur et nickelure, rue St. Maur, 60, Paris.  
 Ledoux, G. et Bar, caoutchouc et gutta percha bruts, boul. Sébastopol, 46, Paris.  
 Leduc, Frédéric, ingénieur électricien, rue Saxe Coburg, 36, Bruxelles.  
 Lefèvre, télégraphie, rue du Repos, 31 et 33, Paris.  
 Lefournier et Maréchal, outils pour électriciens, boul. Sébastopol, 54, Paris.  
 Legay fils, télégraphie, rue Laugier, 42, Paris.  
 Léger frères, courroies de transmission, place des Hospices, 7, Lyon.  
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 Legris, tournier en métaux, rue du Temple, 145, Paris.  
 Leguay, E., aimants, rue de la Tombe-Issire, 79 et 81, Paris.  
 Leguy, V. Hector et fils, appareils servant aux mesures électriques, rue Monsieur-le-Prince, 53, Paris.  
 Lehmann frères, phosphor bronze, rue St. Maur, 86, Paris.  
 Lejeune, A., argentier et doreur, rue du Temple, 83, Paris.  
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 Lemaire et Cie. (orfèvrerie Christoffe), argentiers et doreurs, boul. des Italiens, 33, Paris.  
 Lemaire et Degueldre, nickelieurs et nickelure, rue Charlot, 77, Paris.  
 Lemoine, fils de fer, impasse Marcés, 11, rue Popincourt, 39, Paris.  
 Lemoine, A., Horlogerie électrique, rue Blanche, 7, Paris.  
 Lemoine, J., sonneries et signaux électriques, rue des Pêcheurs, 6, Mezières.  
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 Leszewski, Lad. de et Cie., matériel de lignes télégraphiques, rue de la Montagne Sainte-Geneviève, 25, Paris.  
 Léoné, A. et Cie., cylindres en verre, rue Notre-Dame-de-Nazareth, 31, Paris.  
 Le Nickel, nickel, rue de la Chaussée-d'Antin, 38, Paris.  
 Lep, Charles, sonneries et signaux électriques, rue d'Arenberg, 36, Bruxelles.  
 Lepaute, Henry, phares, rue Lafayette, 6, Paris.  
 Lepinette et Rabilloud, brevets d'invention, avenue de Saxe, 66, Lyon.  
 Lepiat, O., minium, rue de la Chapelle, 46, Paris.  
 Lerenthal, H., caoutchouc et gutta percha bruts, rue Montmorency, 16, Paris.  
 Lemaire fils et Benjamin, caoutchouc, rue de Trévise, 49, Paris.  
 Le Roy, Ch., électricité appliquée à l'industrie, &c., rue du Maine, 3, Paris.



Le Sieur, électricité appliquée à l'industrie, &c., rue des Deux Portes, 6, Paris.  
 Lestrade, F. de, caoutchouc, rue Chevalier Rose, 27, Marseille.  
 Letourneau, télégraphie, avenue Montaigne, 37, Paris.  
 Létrange, L. et Cie., plomb, rue des Handriettes, 1, Paris.  
 Leune, globes et lanternes, rue des Deux-Ponts, 29 et 31, Paris.  
 Le Vasseur et Ouachée, jouets électriques, rue de Rivoli, 154, Paris.  
 Levent, J., éclairage électrique, &c., boul. Magenta, 98, Paris.  
 Lévy, A., caoutchouc, rue Hauteville, 34, Paris.  
 Lévy, E., (*Brevets F. Carré*), charbons électriques, avenue du Maine, 57, Paris.  
 Lévy, Martin et Plainchault, nickel, rue Pierr Levée, 16, Paris.  
 Le Tellier et Verstraet, caoutchouc, rue Turbigo, 47, Paris.  
 L'Hôte, A., piles électriques, rue Marqfoy, 7, Paris.  
 Lhuillien, Vve et Barbanchon, spécialité d'aiguilles aimantées, rue Réaumur, 98, Paris.  
 Liberge, L., tubes et tuyaux, Imp. du Moulin-Joly, 16, Paris.  
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 Liebermann, J., courroies de transmission, boul. du Temple, 18, Paris.  
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 Lilvan, E. aîné, courroies de transmission, boul. de la Paix, 14 bis, Marseille.  
 Lipman, C., ingénieur électricien, Paris.  
 Lippert et Petitqueux, sonneries et signaux électriques, rue Bachelet, 21, Paris.  
 Lissaut et Cosson, verreries et vases pour chimistes et électriciens, rue Martel, 12, Paris.  
 Lizeray, A., charbons électriques, rue des Bois-Belleville, 18, Paris.  
 Loch-Labye De, téléphones et microphones, rue de Cévennes, 56, Paris.  
 Loiseau, Ach., appareils servant aux mesures électriques, rue Fontaine au Roi, 57, et rue Richelieu, 29, 1  
 Loiseau, Ed., sonneries et signaux électriques, boul. d'Enfer, 101, Paris.  
 Lollier et Fils, vases en grès, rue des Trois-Mages, 33, Marseille.  
 Lontin P., ingénieur électricien, Paris.  
 Loppens, A., avertisseurs d'incendie, Gosselies, Hainaut, Belgique.  
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 Lugult Fils, caoutchouc, rue Bouguière, 44, Bordeaux.  
 Luisse Fr., allumeurs et extincteurs électriques, rue des Grands-Augustins, 2, Paris.  
 Luizard, L., piles électriques, rue d'Arcole, 21, Paris.  
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 Magnin, J. et Cie, courroies de transmission, Quai de Serin, 55, Lyon.  
 Maguin, A. manganèse, rue Alibert, 10, Paris.  
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 Paris. Voir index des annonces.  
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 Mallié, G. et Gérard, nickelure et nickelure, boul. Richard-Lenoir, 136, Paris.  
 Mandroux, L. V., télégraphie, rue Caumartin, 71, Paris.  
 Mangenot, piles électriques, rue d'Ulm, 44, Paris.  
 Mangin, L., timbres pour sonneries, boul. Richard Lenoir, 17, Paris.  
 Mappin et Webb, de Londres et Sheffield (A. Deotte et Cie.), argenture et doreurs, rue Vivienne, 34.  
 Marais, sonneries et signaux électriques, rue de Bac, 49, Rouen.  
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 Marchand, E., tubes et tuyaux, Contour de l'Hôtel de Ville, 10, Lille.  
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 Marcillac, télégraphie, Passage Bosquet, 19, Paris.  
 Martel et Fils, sonneries et signaux électriques, rue Meyerbeer, 5, Paris.  
 Martine, J. B., courroies de transmission, rue Quenette, 5, Lille.  
 Martine, Mme., caoutchouc, rue de Roubaix, 15, Lille.  
 Martiny, J. L. et Cie., caoutchouc, rue des Petites-Ecuries, 13, Paris.  
 Mascarely (succ. A. Maire), vases en grès, rue St. Ferréol, 77, Marseille.  
 Masson, courroies de transmission, rue Popincourt, 52, Paris.  
 Masson, F., laminaires, rue de Châlons, 38, Paris.  
 Massonnet et Cie., galvanoplastie, rue du Faubourg St. Dennis, 54, Paris.  
 Mathelin et Garnier, tubes et tuyaux, av. Daumesnil, 125, 127, Paris.  
 Mathieu, L. A., piles et batteries électriques, rue de Saintonge, 20, Paris.



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 Anthien Peillon, tubes et tuyaux, rue Sainte Hélène, 44, Lyon.  
 Aubert, Nickelateur et Nickelure, rue Grange aux-Belles, 35, Paris.  
 Augé, J., Nickelateur et Nickelure, rue Gambey, 22, Paris.  
 Baier, H., câbles et fils isolés, rue du Théâtre, 7, Grenelle.  
 Baier, Henri, ingénieur électricien, rue d'Enghien, 6, Paris.  
 Baisier, fermetures électriques, rue Montbaron, 16, Versailles.  
 Baradier, appareils servant aux mesures électriques, rue de Bourgoynne, 65, Paris.  
 Baradier, E., ingénieur électricien, rue Descartes, 21, Paris.  
 Barcier, T., tubes et tuyaux, boul. Magenta, 31, Paris.  
 Baritens, E. de., électricité appliquée à l'industrie, &c., rue Boursault, 44, Paris.  
 Bastivier, A. télégraphie, rue de Malte, 19, Paris.  
 Bayet, B., ingénieur électricien, boul. St. Denis, 1, Paris.  
 Bayet, Bernard, télégraphie, rue Portalès, 12, Paris.  
 Bayet et Cie., globes et lanternes, rue de Vaugirard, 225, Paris.  
 Bazyer, J. A., minium, rue Lafayette, 85, Paris.  
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 Beauchaud, P., sonneries et signaux électriques, rue Lafon, 4, Marseille.  
 Beauchel, V., galvanoplastie, rue Duquay-Trouin, 3, Paris.  
 Beaumont et Rouart, machines magnéto électriques et dynamos électriques, boul. Voltaire, 137, Paris.  
 Beaumont, O., mais. Doisy, E. L'excellent sucr., argentours et doreurs, rue de Saintone, 47, Paris.  
 Beaumont, P., piles électriques, pl. Lafayette, 109, Paris.  
 Beauregard, J., moteurs électriques, Cours d'Alsace-Lorraine, 110, Bordeaux.  
 Beauregard fils et Cie., Soc., éclairage électrique, rue Laugier, 26, Paris.  
 Beauregard, H. E., vases en grès, rue de la Roquette, 62 et 64, Paris.  
 Beauregard, A., ingénieur électricien, rue Neuve, 7, Amiens.  
 Beauregard de Cobalt de l'Aragon, nickel, rue Caumartin, 28, Paris.  
 Beauregard et Cie., globes et lanternes, boul. Sébastopol, 135, Paris.  
 Beauregard Fils., sonneries et signaux électriques, rue Galande, 57, Paris.  
 Beauregard et Collas, sonneries et signaux électriques, rue Myrrha, 87, Paris.  
 Beauregard, cylindres en verre, rue Paradis Poissonnière, 10, Paris.  
 Beauregard, E., nickelateur et nickelure, rue de Bondy, 36, Paris.  
 Beauregard, tréfilerie de fils d'acier, etc., rue Albouy, 21, Paris.  
 Beauregard, aimants, rue du Château d'Eau, 44, Paris.  
 Beauregard, E., nickelateur et nickelure, galerie Vivienne, 9, Paris.  
 Beauregard et Becket, tubes et tuyaux, rue de Chazelles, 35, Paris.  
 Beauregard, E., et Cie., nickelateurs et nickelure, rue Sedaine, 17, Paris.  
 Beauregard, Ed., outils pour électriciens, rue Sedaine, 8, Paris.  
 Beauregard, ingénieur électricien, rue Pigalle, 57, Paris.  
 Beauregard, globes et lanternes, rue de la Folie-Méricourt, 104, Paris.  
 Beauregard, globes et lanternes, rue Martel, 8, Paris.  
 Beauregard et Voissin, manganèse, rue des Ecoiffes, 25, Paris.  
 Beauregard, J. M. A., fermetures électriques, boul. de Strasbourg, 2, Paris.  
 Beauregard, claviers en ivoire et celluloid, télégraphie rue Oberkampf, 127, Paris.  
 Beauregard, C., machines magnéto électriques et dynamo électriques, boul. Richard-Lenoir, 207, Paris.  
 Beauregard, cylindres en verre, rue de Poitou, 41, Paris.  
 Beauregard, les fils d'Aug., caoutchouc et gutta percha bruts, rue Sévigné, 27, Paris.  
 Beauregard, aimants, rue de Charonne, 195, Paris.  
 Beauregard, Vve., platine, rue Montmartre, 77, Paris.  
 Beauregard, L., tourneur en métaux, rue Orfila, 30, Paris.  
 Beauregard, L., matériel de lignes télégraphiques, rue St. Martin, 4, bis, usines à Grenelle, rue du Théâtre, 48.  
 Beauregard, David, et Fils., courroies de transmission, cité Magenta, 3, boul. Magenta, 33, bis. Paris.  
 Beauregard, James, ingénieur électricien, rue Lord Byron, 16, Paris.  
 Beauregard, fils de cuivre et laiton, rue de Rambuteau, 20, Paris.  
 Beauregard, Cte. Th. du, ingénieur électricien, rue de Hambourg, 7, Paris.  
 Beauregard, J. O., câbles et fils isolés, rue des Communes, 10, Paris.  
 Beauregard, Ch., et Cie., piles et batteries électriques, rue de Ruysbroeck, 61, Bruxelles, Belgique.  
 Beauregard, A., et Cie., outils pour électriciens, rue des Hundriettes, 4, et 6, Paris.  
 Beauregard, A., caoutchouc et gutta percha bruts, rue d'Aboukir, 11, Paris.  
 Beauregard, Ph., et Roux, Ch., machines à vapeur, rue Amélot, 138, Paris.  
 Beauregard, F., téléphones et microphones, rue d'Arenberg, 42, Bruxelles.  
 Beauregard, J. H., mica Faubourg Saint Denis, Paris.  
 Beauregard de Rogan, vases en grès, rue Vacon, 63, Clamart, 135, et 7, et Lile St. Victor, Marseille.

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 Naudet, Alf., ingénieur électricien, rue de Seine, 6, Paris.  
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 Noël, Vick, Alf., appareils servant aux mesures électriques, rue Saint Denis, 163, Paris.  
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 Pavoux et Cie., isolateurs et fournitures de télégraphie et téléphone, rue Delaunoy, 14 & 16, Bré.  
 Peillon, J., paratonnerres, rue de la Barre, 14, Lyon.  
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 Pelletier, A. L., paratonnerres, rue de Rome, 78, Paris.  
 Perille, J., nickelleur et nickelure, avenue de Clichy, 98, Paris.  
 Perin, Grados, fils électriques, boul. Richard Lenoir, 106, Paris.  
 Pernot et Semin, argentiers et doreurs, rue Réaumur, 7, Paris.  
 Perotte, modèles, rue Saint Maur, 73, Paris.  
 Petit, G., avertisseurs d'incendie, rue Blomet, 91, Paris.  
 Petit, J., caoutchouc, rue Saint Remi, 59, Bordeaux.  
 Petit, P., allumeurs et extincteurs électriques, place Cadet, 27, 29, et 31, Paris.  
 Petitjean et Belpêche, fils de fer, rue des Vinaigriers, 29, Paris.  
 Petitqueux et A. Thomas, sonneries et signaux électriques, rue Ravignan, 8, Paris.  
 Pia, G., piles électriques, boul. de Belleville, 44, Paris.  
 Picard, A., isolateurs et fournitures de télégraphie et téléphone, rue du Marais, 62, Paris.  
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 Pieplu, paratonnerres, rue de Bréa, 20, Paris.  
 Pierrard, O., charbons électriques, rue Pelleport, 147, Paris.  
 Pierre, Ve., sonneries et signaux électriques, boul. Maloherbes, 79, Paris.  
 Pile, E., sonneries et signaux électriques, rue de la Perle, 24, Paris.  
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 Piolat, B., zinc, rue Portefoin, 14, Paris.  
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 Léne, nickelour et nickelure, rue de la Roquette, 51, Paris.  
 fils électriques, boul. Richard-Lenoir, 82, Paris.  
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 t Cie, horlogerie électrique, cour des Petites-Ecuries, 8, Paris.  
 t, allumeurs et extincteurs électriques, rue Charlot, 28, Paris.  
 t, R., et Cie., manganèse, avenue de Paris, 20, Saint Denis. Paris.  
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 t et Maquiny, argentours et doreurs, rue du Faubourg, St. Denis, 87, Paris.  
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 J. A. C., télégraphie, rue de Sauve, 21, Nîmes.  
 J. C., tubes et tuyaux, rue Colbert, place Centrale, Marseille.  
 Leb et fils, soc. gén. de verreries, vorreries et vases pour chimistes et électriciens, boul. de la  
 derie, 13, 15, 17, Marseille.  
 nstruments de précision, boul. Saint Germain, 130, et 132, Paris.  
 J., électricité appliquée à l'industrie, &c., rue Saint Martin, 225, Paris.  
 J., Con et Cie., fils d'acier, rue de Lancry, 17, Paris.  
 rff, électricité appliquée à l'industrie, &c., rue Delambre, 20, Paris.

**S.**

V., argentour et doreur, rue d'Enghien, 12, Paris.  
 A., amiante, rue Taylor, 22, Paris.  
 A., piles électriques, rue du Château d'Eau, 25, Paris.  
 F., électricité appliquée aux sciences, rue des Grands, Augustins, 23, Paris.  
 g, matériel de lignes télégraphiques, avenue de Neuilly, 31, Neuilly.

- Sanchez, F. Torres, plomb, rue Séguier, 3, Paris.  
 Sanison, F., piles électriques, av. Duquesne, 39, Paris.  
 Sarassin, E., caoutchouc et gutta percha bruts, rue du Château d'Eau, 27, Paris.  
 Sarcia, Jules, ingénieur électricien, rue de Tocqueville, 9, Paris.  
 Saury, E., sonneries et signaux électriques, rue Saint Laurent, 21, Paris.  
 Sautter, Lemonnier et Cie., machines magnéto et dynamo électriques, avenue de Suffren, 26, Paris.  
 Sauvajon, J., tonneries et signaux électriques, Tournon, Ardèche.  
 Savournin, tubes et tuyaux, rue de la République, 34, Marseille.  
 Sazéral, J. et E. Lout, sonneries et signaux électriques, Brest.  
 Scheider et Cie., fils d'Acier (fabricants), rue de Provence, 56, Paris.  
 Schmidt, saminoirs, rue Popin court, 39, Paris.  
 Schubart, Th., appareils servant aux mesures électriques, rue du Marais, 27, Gand, Belgique.  
 Schultz, J., sonneries et signaux électriques, rue Capdeville, 12, Bordeaux.  
 Scrivanous, Grég, ingénieurs électriciens, rue Vignon, 32, Paris.  
 Segay et fils, électricité appliquée aux sciences, &c., rue Monsieur-le-Prince, 53, Paris.  
 Seligmom, Lui, ingénieur électricien, rue Denfert Rochereau, 23, Paris.  
 Sengel, E., nickel, rue Beautreillis, 22, Paris.  
 Seraine, moteurs à gaz, rue Campagne Première, 8, bis, Paris.  
 Serrin, V., piles électriques, boul. St. Martin, 1, Paris.  
 Seward, M. A. et Cie., le nickel, soc. anonyme, nickel, rue Vergniaud, 49, Bordeaux.  
 Siemens frères, machines magnéto, électriques et dynamo électriques, moteurs électriques, ingénieurs électriciens, rue Picot, 8, Paris.  
 Sieur, Jules Xavier Engène, tableaux indicateurs de sonneries, boul. Saint Marcel, 38, Paris.  
 Simmen, A., accumulateurs et piles électriques, rue Dombaste, 55, Paris.  
 Smith et Coventry, courroies de transmission, rue Alibert, 10, Paris.  
 Smith, W. et fils, fils d'acier, rue de Bondy, 66, Paris.  
 Société an. de fab. de produits chimiques pour les Sciences et l'Industrie, verreries et vase pour chimie et électriciens, rue des Ecoles, 42 et 44, Paris.  
 Société an. de Grivénée, fils de fer, Grivénée, Belgique.  
 Société Anonyme de l'Avertisseur Electro Automatique, sonneries et signaux électriques, rue Scribe, 13, Paris.  
 Société Anonyme d'électricité (A. Gérard), phares passage Cottin, 8, Paris.  
 Société Anonyme de Nickel, fils en nickel, rue de la Chaussée d'Antin, Paris.  
 Société Anonyme des Acieries et Forges de Firminy, fils d'acier, boul. Voltaire, 36, Paris.  
 Société Anonyme des Ateliers de constr. mécanique et d'appareils électriques, lumière électrique, boulevard Voltaire, 207, Paris.  
 Société anonyme des câbles électriques, boul. Haussmann, 33, Paris.  
 Société Anonyme des forges de Châtillon et Commentry, fils d'acier, rue de Chartras, 4, Paris.  
 Société Anonyme des Forges, et Acieries des St. Hippolyte, fils d'acier, faub. Poissonnière, 8, Paris.  
 Société Anonyme des Hauts Fourneaux, rue Terrage, 4, Paris.  
 Société Anonyme des Hauts Fourneaux, Forges, et Fonderies de Franche Comté, câbles et fils iso avenue Daumesnil, 116 et 118, Paris.  
 Société Anonyme des Hauts Fourneaux et Fonderies du Val. d'Osne, tubes et tuyaux, boul. Voltaire, 58, Paris.  
 Société Anonyme des Mines de Mafidano, zinc, rue Lafayette, 12, Paris.  
 Société Anonyme des Zincs Française, zinc, rue du Quatre Septembre, 14, Paris.  
 Société Centrale de Constr. de Machines, machines à vapeur, route d'Aubervilliers, 50, Pantin.  
 Société de Constr. Mécaniques et d'appareils électriques, éclairage électrique, rue St. Florentin, 11, Paris.  
 Société de Constr., Mécan. d'Anzin, établis. de Quillacq, machines à vapeur, Anzin (Nord).  
 Société des couverts Allénide, argentiers et doreurs, rue Hauteville, 4, Paris.  
 Société des Ingénieurs Civils, cité Rougemont, 10, Paris.  
 Société des Ingénieurs Télégraphistes et des Electriciens d'Angleterre, rue de Naples, 4, Paris.  
 Société des Papeteries de Vidalon, papiers-bande pour télégraphie, Vidalon, Annonay, Ardèche.  
 Société Internationale des Electriciens, rue de Grenelle, 99, Paris.  
 Société de l'Electrophone (L. Maiche et Cie., appareils électriques rue Louis-le-Grand, 3, Paris.  
 Société du Familistère, représentée par. A. Moret, nickeleur et nickelure, Faub. St. Martin, 173, Paris.  
 Société Française d'électricité (F. Girard et Cie.), lampes électriques et régulateurs, boul. Haussmann, 44, Paris.  
 Société Française d'Inoxydation et de Platinage, platine, rue des Petits Champs, 76, Paris.  
 Société Franco-Indienne d'Industrie et de d'électricité, appareils électriques, cité Montyon, 6, Paris.  
 Société Générale des Téléphones (Siège Social à Paris) succursale téléphones (société de), Bains de Quinconces, Bordeaux.  
 Société Générale des Téléphones, téléphones, place de la Gare, 1 et 3, Lille.  
 Société Générale des Téléphones, soc. av. 25,000 fr., rue Caumartin, 41, Paris.  
 Société Générale des Téléphones (Siège Social) rue des Petits Champs, Paris, 66, Succursale E. de République, 14, Marseille.  
 Société Générale des Téléphones, (société de), rue Neuve, 1, Lyon.  
 Société Gramme, moteurs électriques, rue Drouot, 15, Paris.  
 Société Ind. et Com. Edison, balances électriques, Ivry sur Seine.  
 Société Ind. et Com. Edison, éclairage électrique, avenue de l'Opéra, 33, Paris.  
 Société Ind. d'Electricité, électricité appliquée à l'industrie, &c., rue Taibout, 29, Paris.  
 Société la Force et la Lumière, piles électriques, avenue de l'Opéra, 5, Paris.  
 Société Lyonnaise de constructions mécaniques et de lumière électrique, machines magnéto électrique et dynamo électriques, rue de Grammont, 19, Paris.  
 Société des machines magnéto électriques, électricité appliquée à l'industrie, &c., rue Drouot, 15, Paris.  
 Société Métallurgique de Gorey, fils de fer, rue des Frères-Bourgeois, 34, Paris.  
 Société Métallurgique de Périgord, fils de fer, rue Taibout, 80, Paris.  
 Société des Mines et Fonderies de Zinc de la Vieille Montagne, zinc, rue Richer, 19, Paris.



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- Société Nouvelle de l'embrayage par l'électricité, électricité appliquée à l'industrie, rue de Provence, 60, Paris.**  
**Société Parisienne de fonderie et de laminage, câbles et fils isolés, rue du Chemin-Vert, 11, Paris.**  
**Société Universelle d'électricité Tommasi, accumulateurs d'électricité, boul. de Courcelles, 118, et rue de Provence, 11, Paris.**  
**Sohier et Cie., fils de fer, rue de Lafayette, 121, Paris.**  
**Solignac et Cie., éclairage électrique, ingénieurs électriciens, &c., rue Saint Maur, 208, Paris.**  
**Somzé, L., L., piles et batteries électriques, rue Royale, 217, Bruxelles.**  
**Sorgue, P., tréfileur, &c., Passage Corbeau, 9, Paris.**  
**Sorrel, Mary, sonneries et signaux électriques, place Ducale, 20, Charleville.**  
**Sveiedad Madriléna de electrici-dad, moteurs électriques, Madrid, Espagne.**  
**Stehelin et Rimé, feutres, rue de la Banque, 14, Paris.**  
**Stevener, galvanoplastie, boul. St. Germain, 122, Paris.**  
**Strebet Dorleans, sonneries et signaux électriques, Faub. du Temple, 106, Paris.**  
**Strube, H., outils pour électriciens, rue Campagne Première, 19, Paris.**  
**Stutz et Cie., instruments pour la physique et la chimie, rue Esquermoise, 13, Lille.**  
**Suisse, F., lampes électriques et régulateurs, rue des Grands Augustins, 23, Paris.**  
**Susse Frères, bronzes, et appareils pour lumières électriques, place de la Bourse, 31, Paris.**  
**Swan United Electric Light Co., Limited (Nelson K. Cherrill), Usine, rue des Sarrazins, 70, Lille.**  
**Syndicat Français de la Lampe Soleil, éclairage électrique, avenue de Wagram, 42, Paris.**

## T.

- Taillifesse, sonneries et signaux électriques, rue Lafayette, 172, Paris.**  
**Talrich, J., modèles, boul. Saint Germain, 97, Paris.**  
**Taverdon, Al., machines à vapeur, rue de l'Arbalète, 36, Paris.**  
**TAYLOR, GEO. CROSLAND, fils isolés, Dee Side Electric Works, Neston, Cheshire, England. Voir index des annonces Britanniques.**  
**Terral, P. appareil Hughes pour transmission, télégraphie, rue du Mesnil, 116 et 118, Paris.**  
**Tessier, Jules, ingénieurs électriciens, rue du Théâtre, 7, Paris.**  
**Teste, A., père, fils et Pichat, tréfilerie de fils d'acier, de fer, de laiton et de zinc, rue Claire, 15, Vaise, Lyon.**  
**Tester, William, téléphones paratonnerres, rue de Vaugirard, Paris.**  
**Texier, de la, Pommirage, pièces tournées pour appareils électriques, avenue Parmentier, 105, Paris.**  
**Thévenon fils, sonneries et signaux électriques, rue de Roanne, St. Etienne.**  
**Thore, horlogerie électrique, rue Porte Saint Georges, 31, Anvers.**  
**Tilloy, A., zinc, rue des Capettes, 9, Amiens.**  
**Touandier, G., moteurs électriques, avenue de l'Opéra, 12, Paris.**  
**Touillon, Verdier et Cie., caoutchouc manufaceure, rue d'Enghein, 25, Paris.**  
**Tournade, Hip., cylindres en zinc et diaphragmes pour piles; entrepreneur breveté, fabrique spéciale de cylindres en zinc et appareils de divers systèmes pour la télégraphie fournisseur des lignes télégraphiques du gouvernement et de l'étranger et des lignes de chemins de fer, Fondettes, près Tours, Indre et Loire.**  
**Trouvé, Gust., batteries électriques, appareils electro médicaux, bateaux électriques, aimants, rue Vivienne, 14, Paris.**

## V.

- Vallejos, H. Lieut.-Colonel, ingénieur électricien, rue du Faubourg St. Honoré, 1, Paris.**  
**Vallois, fils, appareils électriques, rue d'Arcole, 13, St. Etienne.**  
**Vanderbiste, E., moteurs électriques, rue de la Montagne, 68, Bruxelles.**  
**Vandeveldt fils, argenteur et doreur, place du Grand Sablon, 12, Bruxelles.**  
**Van Hulle, ingénieur électricien, rue Chaussée d' Anvers, Bruxelles.**  
**Varral, Elwell et Middleton, machines à vapeur, avenue Trudaine, 1, Paris.**  
**Vasseur-Mercier, A., électricité appliquée aux sciences à l'industrie, à la médecine et aux arts, rue de Rumigny, 49, Amiens.**  
**Vaucelle et fils, poteaux télégraphiques en fer, rue saint Maur, 146, Paris.**  
**Vautrin, J. E., outils pour électriciens, rue du Fg. St. Martin, 236, Paris.**  
**Vauzelle et fils, isolateurs et fournitures de télégraphie et téléphone, rue St. Maur, 146, Paris.**  
**Vayet, sonneries et signaux électriques, rue Ferrandière, 22, Lyon.**  
**Venot, A. et P. St. Germain, caoutchouc et gutta percha bruts, rue de la Barbette, 2, Paris.**  
**Verdavaine, E., paratonnerres, rue Mandar, 10, Paris.**  
**Verreries et cristalleries de la Seine, globes et lanternes, rue St. Sabin, 42, Paris.**  
**Verschave, fils de fer, rue Pavée, Marais, 17, bis Paris.**  
**Verschave, E., tréfileries de fils, d'acier, &c., Quai de la Marne, 44, Paris.**  
**Verné-Spelmans Ant. Brichot & Cie., courroies de transmission, rue de la Prévoyance, 34, Bruxelles.**  
**Vert, C. X., appareils electro-médicaux, passage Bouchardy, 20, Paris.**  
**Vian, électricité appliquée à l'industrie, &c., rue du Châteaudun, 53, Paris.**  
**Videcoq, fils électriques, Rugles, Euro.**  
**Vidie, J. et fils, piles électriques, Route de Flandres, 48, Pantin, Seine.**

Vignon-Choquit, tubes et tuyaux, rue Franklin, 8, Lyon.  
Villemot, minium, rue Amelot, 43 et 52, Paris.  
Villette, U., minium, rue de Cantelew, 8, boul. Montebello, Lille.  
Vinay, E. électricité appliquée à l'industrie, &c., rue Vanneau, 38, Paris.  
Vivez, caoutchouc, rue Douves, 41, Bordeaux.  
Voghels, C., appareils électrique (marchand d'), rue des Pierres, 87, Bruges.  
Voillereau, cabines sourdes pour transmissions téléphoniques, rue Chapon, 29 et 42, Paris.  
Voisin, A., électricité appliquée à l'industrie, &c., rue St. Fargeau, 41, Paris.

## W.

Wackanru, A. vases en grès, rue Grègnau, 2, Marseille.  
Waelput, C., paratonnerres, rue des Rémouleurs, 19, Gand., Belgique.  
Walcker, W., et Cie., sonneries et signaux électriques, rue Rochechouart, 42, Paris.  
Wandenberg, H., sonneries et signaux électriques, rue des Trois Bornes, 39, Paris.  
Wardavoir, Hoël, caoutchouc, rue Esquemoise, 61, Lille.  
Warnon, V. J., piles électriques, rue de la Folie Méricourt, 27, Paris.  
Weil, galvanoplastie, rue des Petites Écuries, 13, Paris.  
Weill, Mich, piles électriques, boul. Sébastopol, 131, Paris.  
Weiller, et Montefiore Levi, fils de cuivre et laiton, Angoulême, Paris.  
Wery, Al., téléphones et microphones, rue de l'Université, 158, Liège, Belgique.  
White, Child et Cie., caoutchouc, boul. de la Liberté, Lille.  
Willot, télégraphie, rue de Boulainvilliers, 57, Paris.  
Wolff, Charles, amiante boul. Richard Lenoir, 103, Paris.

## Z.

Zellweger et Ehrenberg, appareils électriques, Uster, Suisse.  
Zion et L. Chollet, sonneries et signaux électriques, villa d'Orléans, 27, Montrouge, Paris.

# SOCIÉTÉ INTERNATIONALE DES ÉLECTRICIENS.

## LISTE GENERALE DES MEMBRES DE LA SOCIÉTÉ.

(20 Novembre, 1883).

N.B.—MM. les Membres sont priés de vouloir bien adresser au Secrétariat les corrections à introduire dans la présente liste.

Le noms des Membres Donateurs sont précédés du signe \*.

|                                          |                                                                                                                                                |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Abadie, A. .. .. .                       | 48, rue du Quesnoy, à Valenciennes (Nord).                                                                                                     |
| Abria, — .. .. .                         | à Bordeaux (Gironde).                                                                                                                          |
| Achard, Auguste .. .. .                  | 189, rue Lafayette, à Paris.                                                                                                                   |
| Ackere, G. Van .. .. .                   | Constructeur-Electricien, 13, Rue Esquermoise, à Lille.                                                                                        |
| Adam, John, M.A. .. .. .                 | 66A, Leadenhall-st., Londres, E.C.                                                                                                             |
| Adams, William Grylls .. .. .            | Professor, F.R.S., Vice-Président, S.T.E., 43, Notting Hill Square, Londres, W.                                                                |
| Adjarian, H. .. .. .                     | Électricien, 33, rue Hamidié, à Constantinople (Turquie).                                                                                      |
| Albuquerque, Francisco d' .. .. .        | à Porto (Portugal).                                                                                                                            |
| Alglave, Émile .. .. .                   | 27, Avenue de Paris, à Versailles.                                                                                                             |
| Allaire, Edmond .. .. .                  | 28, rue Stéphenson, à Paris.                                                                                                                   |
| Alliot, Eugène .. .. .                   | à Châteaurenault (Indre-et-Loire).                                                                                                             |
| Alluard, — .. .. .                       | Professeur de Physique à la Faculté des Sciences, Directeur-fondateur de l'Oise, servatoire météorologique du Puy-de-Dôme, à Clermont-Ferrand. |
| Alvarez, Julio .. .. .                   | Ingénieur Maritime à San Fernando, province de Cadix (Espagne).                                                                                |
| Alvargonzalez, Victoriano .. .. .        | à Dijon (Espagne).                                                                                                                             |
| Ameye, Camille .. .. .                   | à Iseghem (Belgique).                                                                                                                          |
| Ami, Castor .. .. .                      | Capitaine du Génie, 97, 3 rue Mayor, à Madrid (Espagne).                                                                                       |
| Amonet — .. .. .                         | Directeur de la Société Minéralogique, 13, rue du Helder, à Paris.                                                                             |
| Amaler, Lafon J. .. .. .                 | à Schaffhouse (Suisse).                                                                                                                        |
| Andouard, Ambroise .. .. .               | Professeur à l'école de Médecine de Nantes.                                                                                                    |
| Andrews, J. D. F. .. .. .                | Woodside Electric Wat., Woodside Road, à Glasgow.                                                                                              |
| Andrieu, E. .. .. .                      | Commis principal des Télégraphes, 30, rue Lamouroux, à Agen (Lot-et-Garonne).                                                                  |
| Anterrieu, Émile .. .. .                 | Membre du Conseil Général de l'Hérault et Conseiller Municipal, 7, rue Boussairrolles, à Montpellier (Hérault.)                                |
| Antony, J. .. .. .                       | Électricien, 31, rue Rovigo, à Alger.                                                                                                          |
| Aparicio, Don José .. .. .               | Sous-Directeur des Télégraphes, 1, rue Fernando VI., à Madrid.                                                                                 |
| Apostoli, Docteur .. .. .                | 45, rue Richelieu, Paris.                                                                                                                      |
| Applegarth, R. .. .. .                   | Assistant Engineer, Queen Victoria Street, Londres, E.C.                                                                                       |
| Aradel, G. A. .. .. .                    | 6, rue Blanc-Dutrouille à Bordeaux.                                                                                                            |
| Arbate, A. .. .. .                       | 33, Chemin de Tivoli, au Bouscat, près Bordeaux.                                                                                               |
| Arcoas, Antonio d' .. .. .               | Colonel d'état-Major en retraite, 36, Macse, Rodrigo, Séville.                                                                                 |
| Argyropoulo, Timoléon A. .. .. .         | Professeur de Physique à l'école militaire d'Athènes, 69, rue d'Euripide, à Athènes.                                                           |
| Arlincourt, Vicomte Ludovic d' .. .. .   | Ingénieur-électricien, 8, Avenue de Montespan, à Paris.                                                                                        |
| Armengand (aîné), Charles Eugène .. .. . | 45, rue St. Sébastien, à Paris.                                                                                                                |
| Armengand (jeune) .. .. .                | Ingénieur Civil, Président de la Chambre Syndicale d'électricité, 23, Boulevard de Strasbourg, à Paris.                                        |
| Arnand, J. L. .. .. .                    | Commis des Télégraphes, 4, rue des Fabriques-de-Nadal, à Perpignan.                                                                            |
| Arnoult, Charles .. .. .                 | 37, rue d'Enghien, à Paris.                                                                                                                    |
| Arnoult, Ernest .. .. .                  | 37, rue d'Enghien, à Paris.                                                                                                                    |
| Arnoye, Léon .. .. .                     | Professeur de Physique à Montauban (Tarn-et-Garonne).                                                                                          |
| Arsonval, d' .. .. .                     | Directeur du Laboratoire de Physique Biologique au Collège de France, à Paris.                                                                 |
| Artimini, Antonius .. .. .               | Villa Artimini. à Firenze (Italie).                                                                                                            |
| Asbrouck, Jules .. .. .                  | Directeur du l'Usine à Gaz de Fontevrault (Maine-et-Loire).                                                                                    |
| Assche, François Van .. .. .             | Pharmacien-Chimiste, 13, Quai de la Bourse, à Rouen.                                                                                           |
| Aubert, Charles .. .. .                  | à Rocroi (Ardennes).                                                                                                                           |
| Aubineau, J. .. .. .                     | Administrateur de la Société des Câbles Électriques, 23, rue du Cherche-Midi, à Paris.                                                         |

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|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Aubel, E. Van .. .. .                 | 107, rue Louvrex, à Liège (Belgique).                                                                     |
| Aubout, Léon .. .. .                  | 28, rue Debelloye, à Paris.                                                                               |
| Augueux, Charles .. .. .              | 36, rue de la Folie-Regnault, à Paris.                                                                    |
| Aupinel, Paul .. .. .                 | Commis des Télégraphes à Paris-Auteuil.                                                                   |
| Avenarius, M. .. .. .                 | Professeur à l'Université de Kieff (Russie).                                                              |
| Avril, Adolphe .. .. .                | Conducteur des Ponts-et-Chaussées, 29, rue de Grégoire, à Paris.                                          |
| Avril, Louis Charles René .. .. .     | 86, Avenue Villiers, à Paris.                                                                             |
| Ayries, Louis Charles .. .. .         | 62, Avenue de l'Alma, à Paris.                                                                            |
| Aylmer, John .. .. .                  | Ingénieur électricien, 4, rue de Naples, à Paris.                                                         |
| Babillot, Gabriel .. .. .             | Rue de la Paix, à St. Nazaire.                                                                            |
| Bablon, V. .. .. .                    | 42, rue Boulard, à Paris.                                                                                 |
| Bach, Louis Jean Justin .. .. .       | Docteur en Médecine de la Faculté de Paris, à Conc Ouche (Eure).                                          |
| Bæcker, Henri de .. .. .              | 61, rue de Rennes, à Paris.                                                                               |
| Baille, — .. .. .                     | Répétiteur à l'école Polytechnique, 26, rue Ober à Paris.                                                 |
| Banderali, David .. .. .              | Ingénieur, Chef du Service Central au Chemin de Nord, 7, rue de la Bruyère, à Paris.                      |
| Bandsept, Albert .. .. .              | 16, Chaussée de Wavre, à Bruxelles (Belgique).                                                            |
| Baour, Emmanuel D. .. .. .            | 39, Cours du Pavé-des-Chartrons, à Bordeaux.                                                              |
| Bapst, Jules .. .. .                  | Directeur du Journal des Débats, 20, rue des Ca à Paris.                                                  |
| Bar, Emile .. .. .                    | Inspecteur des Postes et Télégraphes, à Arras (Calais).                                                   |
| Baranger, Aurélien .. .. .            | 3, rue Louis-le-Grand, à Paris.                                                                           |
| Barbey, Lucien .. .. .                | Sous-chef du Laboratoire de la Campagne Chemin de l'Est, 89, rue des Rennes, à Paris.                     |
| Barbey .. .. .                        | Mécanicien-électricien, 154, rue de Belleville, à Par                                                     |
| Barbier, E. .. .. .                   | Chimiste-électricien (piles Leclanché), 9, rue Fru à Paris.                                               |
| Bardet, G. .. .. .                    | Docteur, 196, Boulevard St. Germain, à Paris.                                                             |
| Bardin, Gabriel .. .. .               | Ancien élève de l'école Polytechnique de Hano rue de Bondy, à Paris.                                      |
| Baron, — .. .. .                      | Directeur au Ministère des Postes et Télégraphes, Madame, à Paris.                                        |
| Bassot, E. .. .. .                    | Secrétaire de la Cie des Mines d'Abosso, 4, rue Di Paris.                                                 |
| Bastings, Alexandre .. .. .           | Docteur-électrothérapeute, 1, rue Josephat, à Bruxel                                                      |
| Batail, Bernard .. .. .               | Fabricant d'appareils électriques, à Mondet, près T (Lot-et-Garonne).                                     |
| Baudelle, Henri .. .. .               | 3, rue Carré, à Troyes.                                                                                   |
| Baudement, Théophile .. .. .          | Commis des Télégraphes, 20, Place des Voeges, à P                                                         |
| Baudet, Cloris .. .. .                | Electricien, 90, rue St. Victor, à Paris.                                                                 |
| Baudot, Emile .. .. .                 | Ingénieur des Télégraphes, 181, rue de Vaugirard, i                                                       |
| Baudrais, J. .. .. .                  | 25, rue Royale, à Paris.                                                                                  |
| Baume-Pluvinel, Aymar de la .. .. .   | 20, rue de Courcelles, à Paris.                                                                           |
| Bazquer, L. .. .. .                   | Horloger des Postes, 115, Cours d'Alsace-et-Lon Bordeaux.                                                 |
| Bazin, Auguste .. .. .                | 21, rue St. Pétersbourg, à Paris.                                                                         |
| Bazin, Ernest .. .. .                 | 10, Place Percire, à Paris.                                                                               |
| Beau, Henri .. .. .                   | 226, rue St. Denis, à Paris.                                                                              |
| Beaufils, Magloire François .. .. .   | Contrôleur des Télégraphes, 76, rue de Rennes, à P                                                        |
| Becquerel, Edmond .. .. .             | Membre de l'Institut, 57, rue Cuvier, à Paris.                                                            |
| Becquerel, Henri .. .. .              | Répétiteur à l'école Polytechnique, 57, rue Cuvier, à                                                     |
| Bode, Emile .. .. .                   | Ingénieur, ancien Professeur à la Faculté des Scien l'école des Mines de Liège, 41, rue du Mar Bruxelles. |
| Béer, Emile .. .. .                   | Directeur Ingénieur des Télégraphes à Clermont-l (Puy-de-Dôme).                                           |
| Béjar, Alexandre de .. .. .           | à Carthagène (Espagne).                                                                                   |
| Belfield, Réginald .. .. .            | Lyndally, Palace Road, à Londres, S.W.                                                                    |
| Bellanger, — .. .. .                  | Commis principal des Télégraphes, 37, Chemin d'A à Bois-Colombes.                                         |
| Bellemare, V. .. .. .                 | à Chambray, par Pacy (Eure).                                                                              |
| Belleville, J. .. .. .                | 16, Avenue Trudaine, à Paris.                                                                             |
| Belliéni, H. .. .. .                  | Constructeur d'instruments de précision, 17, Pl l'Académie, à Nancy.                                      |
| Bellet, Henri Arsène .. .. .          | 71, rue des Saints-Pères, à Paris.                                                                        |
| Benneson, Vassé .. .. .               | Chez M. Vassé, apprêteur à Donchery (Ardennes).                                                           |
| Bennett, James Gordon .. .. .         | Directeur de la Société des câbles " Mackay-Bennett avenue des Champs-Élysées, à Paris.                   |
| Berastegui, Fernum .. .. .            | Calle de St. Andres 33, 1, à Madrid.                                                                      |
| Berbinau, Guillaume Hippolyte .. .. . | Capitaine de Frégate, 61, Grande-Rue, à Brest.                                                            |
| Berger, C. .. .. .                    | 38, rue des Jeûneurs, à Paris.                                                                            |



# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

|                                                                                       |                                                                                                                                                            |
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| r, Georges .. .. .                                                                    | Commissaire général de l'Exposition internationale d'électricité de Paris, en 1881, Administrateur délégué de la maison Bréguet, 8, rue Legendre, à Paris. |
| ron, — .. .. .                                                                        | Receveur des Postes et Télégraphes à Riom (Puy-de-Dôme).                                                                                                   |
| t, Alphonse .. .. .                                                                   | Licencié ès sciences mathématiques, 14, avenue des Gobelins, à Paris.                                                                                      |
| n, — .. .. .                                                                          | Directeur au Ministère des Postes et Télégraphes, 56, rue Madame, à Paris.                                                                                 |
| Vve. J. B. .. .. .                                                                    | 68, Boulevard Beaumarchais, à Paris.                                                                                                                       |
| r, Jean Baptiste .. .. .                                                              | Ingénieur, rue du Général-Foy, 17, à Paris.                                                                                                                |
| er, J. .. .. .                                                                        | Fabricant de Téléphones et de Microphones, à Hanovre.                                                                                                      |
| , Jules Albert, C.E., A.S.T.E. .. .. .                                                | 16, New Bridge Street, Londres, E.C.                                                                                                                       |
| rd, F. .. .. .                                                                        | 28, rue de la Côte Saint Thibault, à Bois-Colombes (Seine).                                                                                                |
| rd, Julien .. .. .                                                                    | 8, rue de l'Echiquier, à Paris.                                                                                                                            |
| m, A. .. .. .                                                                         | Ingénieur, Chef des Services techniques de la Société des Téléphones, 51, rue de la Chaussée d'Antin, à Paris.                                             |
| oud, Auguste .. .. .                                                                  | 16, rue du Bassin, à Neuchâtel (Suisse).                                                                                                                   |
| oud, Edouard .. .. .                                                                  | à Cortaillod (Suisse).                                                                                                                                     |
| i, Camille .. .. .                                                                    | 92, Avenue d'Iéna, à Paris.                                                                                                                                |
| i, E. .. .. .                                                                         | (Docteur), 84, Boulevard St. Michel, à Paris.                                                                                                              |
| hi, François .. .. .                                                                  | Quartier-maitre mécanicien à l'école des Torpilles, à Boyardville (Ile d'Oléron).                                                                          |
| lt, Léon .. .. .                                                                      | Ingénieur en chef des Ponts-et-Chaussées, 27, Cours du Parc, à Dijon.                                                                                      |
| ll, Shelford, M. A., LL.B. .. .. .                                                    | Associé Membre du Conseil, Southfields, Wandsworth, à Londres, S.W.                                                                                        |
| r, Clément .. .. .                                                                    | Official, Chef des Constructions télégraphiques, à Brünn (Autriche).                                                                                       |
| mi, Enrico, Società industriale Franco-Italiana, 82, Corso Venezia, à Milan (Italie.) |                                                                                                                                                            |
| roux, A. .. .. .                                                                      | à Bordeaux.                                                                                                                                                |
| -Daguerre, Armond .. .. .                                                             | 58, rue Fontaine-au-Roi, à Paris.                                                                                                                          |
| Ludovic .. .. .                                                                       | East Dulwich, à Londres, S.E.                                                                                                                              |
| ffenheim, R. .. .. .                                                                  | Député, 3, rue Taitbout, à Paris.                                                                                                                          |
| Joseph .. .. .                                                                        | Receveur des Postes et Télégraphes à Aix (Bouches-du-Rhône).                                                                                               |
| John .. .. .                                                                          | 45, Chepstow Place, Bayswater, à Londres, W.                                                                                                               |
| wood-Price, Henri B. .. .. .                                                          | Sous Directeur du "Eastern Telegraph," A.S.T.E., 12, Via Carintia, à Trieste (Autriche).                                                                   |
| hon, André .. .. .                                                                    | Ingénieur des Arts et Manufactures, 35, rue Bourbon, à Lyon.                                                                                               |
| r, E. .. .. .                                                                         | Directeur Ingénieur des Postes et Télégraphes, 62, rue Nicolo, Passy-Paris.                                                                                |
| William .. .. .                                                                       | Docteur en Médecine, 3, place du Palais-Bourbon, à Paris.                                                                                                  |
| , A. .. .. .                                                                          | Ingénieur Civil, 2, Boulevard de Strasbourg, à Paris.                                                                                                      |
| , C. .. .. .                                                                          | Ingénieur Civil, 2, Boulevard de Strasbourg, à Paris.                                                                                                      |
| antin, — .. .. .                                                                      | Inspecteur Ingénieur des Télégraphes, à Nice (Alpes-Maritimes).                                                                                            |
| rde, Baron van den .. .. .                                                            | 9, rue Philippe-le-Bon, à Bruxelles.                                                                                                                       |
| ux, — .. .. .                                                                         | Lieutenant de Vaisseau à bord du <i>Redoutable</i> , Escadre de la Méditerranée.                                                                           |
| t, Pierre .. .. .                                                                     | à Saint-Genest, l'Erpt, près Saint-Etienne (Loire).                                                                                                        |
| teymond, E. du .. .. .                                                                | Professeur et Secrétaire perpétuel de l'Académie des Sciences, 15, Neue Wilhelmstrasse, à Berlin, N.W.                                                     |
| l, G. .. .. .                                                                         | Ingénieur, Directeur de la maison, "Siemens Frères," 8, rue Picot, à Paris.                                                                                |
| l, Ernest .. .. .                                                                     | 10, rue Fontenay, à Sceaux.                                                                                                                                |
| — .. .. .                                                                             | Agronome, 2, rue Croix-des-Vignes, à Gennevilliers-les-Paris.                                                                                              |
| , A. .. .. .                                                                          | Sonneries électriques, 16, rue de l'Abbaye, à Paris.                                                                                                       |
| , J. de .. .. .                                                                       | Administrateur de la Banque Parisienne, 86, Boulevard Haussmann, à Paris.                                                                                  |
| , Francis .. .. .                                                                     | Secrétaire Honoraire de la Sté. des Ingrs. télégraphistes Anglais, 4, The Sanctuary, Londres, S.W.                                                         |
| , F. .. .. .                                                                          | Directeur du Télégraphe sous-marin "Eastern Telegraph Co.," 12, Via Carintia, à Trieste (Autriche).                                                        |
| in, Gaston .. .. .                                                                    | Manufacturier, 1, rue Saint-Georges, à Paris.                                                                                                              |
| — .. .. .                                                                             | Directeur de la Compagnie des Téléphones, à Bordeaux.                                                                                                      |
| ite, — .. .. .                                                                        | Ingénieur électricien, 3, rue Gresset, à Nantes.                                                                                                           |
| — .. .. .                                                                             | Directeur des Ateliers de la maison Bréguet, 18, rue Montmartre, à Paris.                                                                                  |
| ffé, L. .. .. .                                                                       | 19, rue Fondaudège, à Bordeaux.                                                                                                                            |
| ffé, L. .. .. .                                                                       | à Valence d'Agen.                                                                                                                                          |
| r, Enrique .. .. .                                                                    | à Cadix (Espagne).                                                                                                                                         |
| nps, Charles .. .. .                                                                  | Ingénieur des Télégraphes, 103, rue de Grenelle, à Paris.                                                                                                  |
| l, Henri .. .. .                                                                      | Administrateur de la Cie. Bordelaise de Navigation à Vapeur, à Bordeaux.                                                                                   |
| Martinaud .. .. .                                                                     | Électricien, 85, Avenue de Neuilly, à Neuilly-sur-Seine.                                                                                                   |

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| Borel, Docteur François .. .. .       | à Cortaillod (Suisse).                                                                                |
| Borges, F. Julio .. .. .              | Agronome, 17, Calçada d'Adjuda, à Lisbonne.                                                           |
| Borns, D. .. .. .                     | Leith Villa, à Reigate (Angleterre).                                                                  |
| Boscowitz, Arnold .. .. .             | 9, route de Genevilliers, à Colombes (Seine).                                                         |
| Bosscha, J. .. .. .                   | Directeur de l'École Polytechnique, à Delft (Pays-B)                                                  |
| Boudet de Paris .. .. .               | (Docteur), 4, rue de l'Isly, à Paris.                                                                 |
| Boulard, Joseph .. .. .               | Ingénieur, 13, rue Vavin, à Paris.                                                                    |
| Bourbouze, G. .. .. .                 | Professeur de physique, 340, rue St. Jacques, à Paris                                                 |
| Bourdelle, — .. .. .                  | Ingr. en Chef des Ponts-et-Chaussées, attaché, à la<br>tion des Phares, 22, rue d'Edimbourg, à Paris. |
| Bourdin, Charles Louis .. .. .        | 13, Avenue de la République, à Paris.                                                                 |
| Bourdon, Eugène (père) .. .. .        | 74, Faubourg du Temple, à Paris.                                                                      |
| Bourdon, Edmond .. .. .               | Rue de l'Ouest, à Colombes (Seine).                                                                   |
| Bourgery, — .. .. .                   | Notaire, à Nogent-le-Rotrou.                                                                          |
| Bourry, Emile .. .. .                 | Ingénieur, Rédacteur en Chef du Journal "Le Céra<br>80, rue Taitbout, à Paris.                        |
| Boursault, Henri Alexandre Octave ..  | Attaché au Laboratoire de Chimie du Chemin de fer du<br>10, rue Stephenson, à Paris.                  |
| Boussac, — .. .. .                    | Chef de Bureau au Ministère des Postes et Télégraph<br>rue de Grenelle, à Paris.                      |
| Boutard, — .. .. .                    | Ingénieur des Télégraphes, à Caen (Calvados).                                                         |
| Bouteilloux, Docteur .. .. .          | 12, place d'Aisne, à Limoges.                                                                         |
| Braam, Jean André de .. .. .          | 3, rue des Mathurins, à Paris.                                                                        |
| Braby, Frédéric .. .. .               | F.C.S., F.G.S., Bushey Lodge, Teddington (Anglet                                                      |
| Brachet, Henri .. .. .                | 36, Montée St. Barthélemy, à Lyon.                                                                    |
| Branly, Edouard .. .. .               | Docteur ès sciences et Docteur en Médecine, 42, Ave<br>Breteuil, à Paris.                             |
| Branville, P. de .. .. .              | Ingénieur Civil, Constructeur d'Appareils télépho<br>15, rue Montagne Ste. Geneviève, à Paris.        |
| Bréguet, Louis .. .. .                | Membre de l'Institut, 39, Quai de l'Horloge, à Pari                                                   |
| Bresson .. .. .                       | 25, rue Duquesne, à Lyon.                                                                             |
| Bresson, L. .. .. .                   | Directeur de l'Usine à Gaz, à Valence (Drôme).                                                        |
| Brienvu, Henri .. .. .                | Receveur des Télégraphes à la gare, à Lyon Perrach                                                    |
| Bright, Edward B. .. .. .             | 31, Golden Square, Londres, W.                                                                        |
| Bright, Sir Charles, M. Inst. C.E. .. | 31, Golden Square, Londres, W.                                                                        |
| Bright, John B. .. .. .               | 31, Golden Square, Londres, W.                                                                        |
| Brix, Dr. Ph. Wilhelm .. .. .         | Ingénieur des Télégraphes, R.P.A., à Charlotte<br>près Berlin.                                        |
| Brousset, Pierre .. .. .              | à Tunis.                                                                                              |
| Brown, Charles .. .. .                | à Winterthur (Suisse.)                                                                                |
| Brown, Robert Georges .. .. .         | 41, rue Caumartin, à Paris.                                                                           |
| Brugère, Henri .. .. .                | 3, rue de Lille, à Paris.                                                                             |
| Buchin, Auguste .. .. .               | Ingr. électricien, 11, rue Rolland, à Bordeaux.                                                       |
| Buffe, Armand .. .. .                 | Horloger électricien, 1, rue Arago, à Alger.                                                          |
| Bugues, Josh D. .. .. .               | Ingénieur, 98, rue Lafayette, à Paris.                                                                |
| Buguet, Abel .. .. .                  | Professeur de Physique, au Lycée de Moulins-sur-A                                                     |
| Buris, Alexandro .. .. .              | Officier des Hussards Hongrois, à Governolo, provi<br>Mantoue (Italie).                               |
| Bussi, M. .. .. .                     | 12, Via Moravigli, Milano.                                                                            |
| Buxtorf, Emmanuel .. .. .             | Ingr. Constructeur, rue de Paris, à Troyes (Aube).                                                    |
| Cabanellas, Gustavo .. .. .           | Anc. Officier de Marine, Ingénieur électricien,<br>Andrieux, à Paris.                                 |
| Cadiot, Emmanuel Horace .. .. .       | 3, East India Avenue, Londres, E.C.                                                                   |
| Cadiou, Félix .. .. .                 | Directeur Technique des Télégraphes, 100, rue Bo<br>Alger.                                            |
| Caël, — .. .. .                       | Directeur Ingénieur au Ministère des Postes et<br>graphes, à Paris.                                   |
| Cahen, Albert .. .. .                 | Ingénieur, 1, Boulevard St. Denis, à Paris.                                                           |
| Cail, Casimir .. .. .                 | Ingénieur Electricien, Chef du Sec. Télégque. de l<br>Sewastopol-Ekaterinoslaw, à Sewastopol (Russie) |
| Cailleret, Henri .. .. .              | Commis principal des Télégraphes, 44, rue des Guing<br>à Lille.                                       |
| Calais, Louis .. .. .                 | 38, rue Grand Chemin, à Cotte.                                                                        |
| Caméré, A. .. .. .                    | Ingénieur en Chef des Pts. et Chaussées, à Vernon (E                                                  |
| Canning, Herbert .. .. .              | 53, Lincoln's Inn Fields, Londres, E.C.                                                               |
| *Cantacuzène, J. A. .. .. .           | Station Bucceca (Roumanie), (Via Lemberg).                                                            |
| Capsa, L. M. .. .. .                  | Colonel, à Bucharest (Roumanie).                                                                      |
| Cardot, Abel .. .. .                  | Juge au Tribunal, à Bougie (Algérie).                                                                 |
| *Carpentier, J. .. .. .               | Ancien Ingénieur des Mres. de l'Etat, successe<br>Ruhmkorff, 34, rue du Luxembourg, à Paris.          |
| Carson, William .. .. .               | Directeur Whitecross Wire et Iron Co., à Warri<br>(Angleterre).                                       |
| Cartault, Paul .. .. .                | 6, Quai de la Mégisserie, à Paris.                                                                    |
| Cusalonga, D. A. .. .. .              | Ingénieur Civil, Directeur de la <i>Chronique Industri</i><br>rue des Halles, à Paris.                |

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| nes, Alfred G. . . . .              | Ingénieur Civil, Directeur des <i>Annales Industrielles</i> , 18, rue Lafayette, à Paris.                                    |
| , Adrien . . . . .                  | Ingénieur Civil, à Montauban (Lot et Garonne).                                                                               |
| heira, — . . . . .                  | Dr. des Télégraphes et des Phares de Portugal, à Lisbonne.                                                                   |
| Jules de . . . . .                  | 32, rue Le Peletier, à Paris.                                                                                                |
| eo, Chevalier Robert . . . . .      | Direttore della Società di Monteponi, 41, rue Cavour, à Turin, (Italie).                                                     |
| chi, Henri . . . . .                | 7, Avenue Velasquez, à Paris.                                                                                                |
| , Joseph . . . . .                  | Opticien-Constructeur, 1, rue Montorge, à Grenoble (Isère).                                                                  |
| t, L. . . . .                       | 2, rue de Lisbonne, à Paris.                                                                                                 |
| er, E. . . . .                      | Administrateur de la Compagnie Générale Transatlantique, 4, Avenue du Coq, à Paris.                                          |
| J. . . . .                          | Ingénieur Civil, Chef des travaux graphiques à l'École centrale des Arts et Manufactures, 4, rue Beaurepaire, à Paris.       |
| , Jules . . . . .                   | à Maisons-Laffitte (Seine et Oise).                                                                                          |
| allan, Victor . . . . .             | 15, rue Dauphine, à Paris.                                                                                                   |
| re, Alan . . . . .                  | Général Post Office, à Londres, E.C.                                                                                         |
| roy, Hippolyte . . . . .            | Electricien, 89, Avenue Centrale, au Vésinet (Seine-et-Oise).                                                                |
| , Antoine . . . . .                 | Ingénieur de Manufactures de Tissus, 25, rue de Vauban, à Lyon.                                                              |
| a, Léopold . . . . .                | à Condom (Gers).                                                                                                             |
| on, Charles Emilo . . . . .         | Ingénieur Civil, Inspecteur ppal. adj. à la Cie. P.L.M., 33, rue de la Bienfaisance, à Paris.                                |
| on, G. . . . .                      | Ingénieur Civil des Mines, 6, rue Gay-Lussac, à Paris.                                                                       |
| o, Armand . . . . .                 | Fondeur Constr. au Mans (Sarthe).                                                                                            |
| s, François . . . . .               | 17, rue de Lourmel, à Paris.                                                                                                 |
| t, J. B. . . . .                    | 25, rue Saint Ambroise, à Paris.                                                                                             |
| vent, Henri Mario Camille . . . . . | Ingénieur des Arts et Manufres., 11, Bould. de Magenta, à Paris.                                                             |
| saignes, — . . . . .                | Ingénieur des Postes et des Télégraphes, 103, rue de Grenelle, à Paris.                                                      |
| n, Eugène M. . . . .                | 40, rue de St. Germain, à Argenteuil (Seine-et-Oise).                                                                        |
| mes, Roger . . . . .                | Ingénieur, électricien, 9, rue du Palais de Justice, à St. Quentin, (Aisne).                                                 |
| neteff, A. W. de . . . . .          | 40, Avenue Marceau, à Paris.                                                                                                 |
| t, Paul . . . . .                   | Interne des Hôpitaux de Paris, 4, Cité Condorcet, à Paris.                                                                   |
| Pierre Antoine . . . . .            | Ex. Pharmacien Major de l'Armée, à Ernée (Mayenne).                                                                          |
| d, Henri . . . . .                  | Ingénieur Civil à Rochefort sur Mer (Charente Inférieure).                                                                   |
| is, — . . . . .                     | Directeur des Postes et Télégraphes de la Tunisie, à Tunis.                                                                  |
| tte, Abbé C. P. . . . .             | Professeur de Physique, à St. Hyacinthe (Canada). P.Q.                                                                       |
| ry, Eugène . . . . .                | à Nuits (Côte d'Or).                                                                                                         |
| m, J. . . . .                       | 87, rue de Monceau, Paris.                                                                                                   |
| rie, Paul . . . . .                 | 56, rue de Bondy, à Paris.                                                                                                   |
| owski, Comte Auguste . . . . .      | Membre de l'Académie des Sciences, de Varsovie, etc., à Wiczenica, près Posen.                                               |
| id, C. . . . .                      | Ingénieur Electricien, 15, rue Picot, à Paris.                                                                               |
| Latimer . . . . .                   | M. Inst. C.E., 6, Westminster Chambers, Westminster, Londres, S.W.                                                           |
| Thomas Sutton . . . . .             | 28, Faulkner Street, à Manchester (Angleterre).                                                                              |
| is, R. . . . .                      | à Bönn (Prusse rhénane).                                                                                                     |
| Henri . . . . .                     | Négociant, à Névian, près Narbonne (Aude).                                                                                   |
| rn, John . . . . .                  | 3, Spring Gardens, Londres, S.W.                                                                                             |
| it, Gustave . . . . .               | Appareilleur d'Electricité, 56, Boulevard Voltaire, à Paris.                                                                 |
| Hippolyte . . . . .                 | Ingénieur des Télégraphes, 24, rue Bertrand, à Paris.                                                                        |
| L. . . . .                          | 86, Avenue des Ternes, à Paris.                                                                                              |
| , Robert Bollamy . . . . .          | Portland Lodge, Park Town, Oxford (Angleterre).                                                                              |
| y, Adolphe . . . . .                | Député, Ministre des Postes et Télégraphe, 99, rue de Grenelle, à Paris.                                                     |
| y, Georges . . . . .                | Dr. du Cabinet du Mtr. des P. et Télég, 99, rue de Grenelle, à Paris.                                                        |
| Walter H. . . . .                   | F.C.S., M. Phys. S., 94, Cornwall Gardens, South Kensington, Londres, S.W.                                                   |
| Charles . . . . .                   | Industriel, 15 et 17, rue Salneuve, à Paris.                                                                                 |
| B. . . . .                          | Ingénieur Civil, ancien élève de l'école Polytechnique, 80, rue St. Lazare, à Paris.                                         |
| r, Henri . . . . .                  | Dr. en Médecine, au Puy (Haute Loire).                                                                                       |
| a, L. . . . .                       | Ingénieur Civil, 3 rue de l'Esplanade, à Anvers.                                                                             |
| chi, Raphael . . . . .              | Ingénieur Directeur Général de la Società Italiana di Telefoni et applicazione elettrica, 24, via Medina, à Naples (Italie). |
| , — . . . . .                       | Ancien Capitaine, à St. Sauveur (Yonne).                                                                                     |
| Harold . . . . .                    | 7, Cobridge Road, à Londres, N.                                                                                              |
| Thomas Marschall . . . . .          | 29, Mornington Crescent, Londres.                                                                                            |
| e, J. M. . . . .                    | Ingénieur, Chef du Service Technique des Télégraphes des Pays-Bas, à la Haye (Hollande).                                     |
| rousse, Ch. de . . . . .            | Professeur au Conservatoire des Arts et Métiers et à l'école Centrale, 45, rue Blanche, à Paris.                             |

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| Comerma, André A. . . . .            | à Forrol (Espagne).                                                                 |
| Compagnie Houillière . . . . .       | (Le Directeur de la), à Besseges (Gard).                                            |
| Comte, Edouard . . . . .             | Manufacturier, à Chantilly (Oise).                                                  |
| Connan, L. . . . .                   | Ancien Sous Préfet, Avenue de Melakoff, à Paris.                                    |
| Conod, L. . . . .                    | Horloger, à Livron (Drôme).                                                         |
| Cooper, Charles Friend . . . . .     | European Docks, Haggerston.                                                         |
| Constantin, Joan . . . . .           | 8, rue Cornavent, à Villeurbanne (Rhône).                                           |
| Corgne, A. . . . .                   | Hôtel de la Plage, à Dieppe.                                                        |
| Corneloup, Octave Antoine . . . . .  | Ingénieur Civil, 40, rue de Buci, à Paris.                                          |
| Cornély, Maximilien . . . . .        | 86, rue St. Lazare, à Paris.                                                        |
| Cosmovici, Alexandre . . . . .       | à Botosani (Roumanie).                                                              |
| Cosmovici, Léon C. . . . .           | Docteur des Sciences, professeur de l'Université, à (Roumanie).                     |
| Cotrel-Decaux, — . . . . .           | 1, rue des Bouchers, à Péronne (Somme).                                             |
| Coulon, Philippe . . . . .           | Ingénieur, 6, rue du Bel-Respiro, à Paris.                                          |
| Coulon, R. de . . . . .              | 110, Bould., St. Germain, à Paris.                                                  |
| Coumbary, — . . . . .                | Dr. de l'Observatoire, Météorologique à Constantinop.                               |
| Couret-Pléville, — . . . . .         | 64, rue du Rempart, à Paris.                                                        |
| Courjon, Docteur A. . . . .          | à Meyzien, (Isère).                                                                 |
| Courquin, Abbé Art . . . . .         | Professeur de Physique à Tourcoing (Nord).                                          |
| Courtet, Léopold Marie . . . . .     | à Louvigné-du-Désert (Ile et Vilaine).                                              |
| Courtois, Louis . . . . .            | Ingénieur de la Cie. R. Asturienne, à Aubry-les-Bons<br>Flers-en-Escrebieux (Nord). |
| Courtois, de Langlade (de) . . . . . | à Arles sur Rhône.                                                                  |
| Couteux, Léon . . . . .              | 6, rue des Archives, à Paris.                                                       |
| Couturier, Paul (Curé) . . . . .     | à Malay, par Cormatin (Saône et Loire).                                             |
| Crayon, Denis . . . . .              | à Pont Evêque près Vienne (Isère).                                                  |
| Crépeaux, Constant . . . . .         | à l'Usine de Dol-de-Bretagne (Ile-et-Vilaine).                                      |
| Crompton, R. E. . . . .              | 4, Mansion House Buildings, Londres, E.C.                                           |
| Cros, Méderic . . . . .              | Professeur de Physique, à St. Gaudens (Haute Garon)                                 |
| Crova, André . . . . .               | 14, rue du Carré-du-Roi, à Montpellier.                                             |
| Cruse, Adolphe . . . . .             | 124, Quai des Chartrons, à Bordeaux.                                                |
| Cunnington, J. S. . . . .            | 10, Carlinge Road, Cricklewood, Londres, N.W.                                       |
| Curchod, L. . . . .                  | Dr. du Bureau International des Administrations<br>graphiques, à Berne (Suisse).    |
| Curie, Pierre . . . . .              | 8, rue de Saint-Simon, à Paris.                                                     |
| Dagrève, Elie . . . . .              | à Tournon (Ardèche).                                                                |
| Dalmas, Albert de . . . . .          | Au Château de Seyre (Haute Garonne).                                                |
| Dalmau, Thomas Y. . . . .            | à Barcelonne (Espagne).                                                             |
| Damoiseau, Albert . . . . .          | 3, Bould. Arago, à Paris.                                                           |
| Daniell, Francis J. B. . . . .       | Supt. Indo-Europ. Government Telegraphs, à T<br>(Perse).                            |
| Danton, Jacques-Désiré . . . . .     | Ingénieur Civil des Mines, 11, Avenue de l'Observat<br>Paris.                       |
| Danvers, Henri . . . . .             | Ingénieur de la maison Hutchinson, 19, rue de Mad<br>Paris.                         |
| Darq, E. . . . .                     | Ingénieur des Télégraphes, 103, rue de Grenelle, à P                                |
| Daries, Aristide . . . . .           | Electricien, 4, rue Bernadotte, à Pau (Basses Pyrénées)                             |
| Dario, Louis . . . . .               | Contrôleur des Télégraphes, à Tarbes (Hautes Pyrénées)                              |
| Daubrée, Augusto . . . . .           | Membre de l'Institut, École Nationale des Mines, à P                                |
| Dauphin, Eugène . . . . .            | Commis des Télégraphes, à Troyes (Aube).                                            |
| Debeauve, Paul . . . . .             | 42, rue Notre Dame des Champs, à Paris.                                             |
| Decauville, Aîné . . . . .           | Ingénieur, à Petit-Bourg (Seine-et-Oise).                                           |
| Dehonne, Georges . . . . .           | Ingénieur Civil, 38, Avenue de Malakoff, à Paris.                                   |
| Delahodde, Victor . . . . .          | 19, rue Gauthier-de-Châtillon, à Lille.                                             |
| Delamotte, Georges . . . . .         | à Quessy, par Tergnier (Aisne).                                                     |
| Delaporte, Georges . . . . .         | Ingénieur, à Tarare (Rhône).                                                        |
| Delaunay, — . . . . .                | 16, Bould. Châteaudun, à St. Dennis.                                                |
| Delcasse, Eugène Edmond . . . . .    | Docteur, 22, rue N. D. de Lorette, à Paris.                                         |
| Delineau, — . . . . .                | Le Docteur, 20, Bould. Richard-Lenoir, à Paris.                                     |
| Delocro, — . . . . .                 | Ingénieur en Chef des Ponts et Chaussées, 38, rue Fra<br>à Lyon.                    |
| Delpech, — . . . . .                 | 10, rue Logelbach, Paris.                                                           |
| Delpech, Junior . . . . .            | 190, Boulevard Haussmann, à Paris.                                                  |
| Demarchi, Lamberta . . . . .         | Ingénieur, 65, Via Napoli, à Rome.                                                  |
| Demoy, Joan Ludovic . . . . .        | Receveur des Postes et Télégraphes, 83, Boulevard<br>marchais, à Paris.             |
| Deneufville, J. . . . .              | Bois du Nord, au Havre (Seine Inférieure).                                          |
| Dennis, Félix . . . . .              | No. 221, au Havre.                                                                  |
| Depeau, Paul . . . . .               | Lieutenant de Vaisseau, à bord du " Trident " (E<br>d'Evolution).                   |
| Deschamps, Ripert, . . . . .         | Négociant à Beyrouth (Syrie).                                                       |
| Deschevow, Michel de . . . . .       | 132, Fontanka, à St. Pétersbourg.                                                   |
| Deschiens, Joseph Eugène . . . . .   | 123, Boulevard St. Michel, à Paris.                                                 |
| Desnos, Edouard . . . . .            | 26, Avenue Bosquet, à Paris.                                                        |



# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

|                            |                                                                                                        |
|----------------------------|--------------------------------------------------------------------------------------------------------|
| intes, François .. .. .    | Submarin Telegraph Company, 16, St. George's Square, Regent's Park, Londres, N.W.                      |
| ziers, E. .. .. .          | Ingénieur Civil des Mines, 2, Impasse Mazagran, à Paris.                                               |
| elles, Lucien .. .. .      | Ingénieur Civil, 8 bis, Avenue Percier, à Paris.                                                       |
| yat, — .. .. .             | Ingénieur des Télégraphes, 3, rue des Arsins, à Rouen.                                                 |
| ch, Emile .. .. .          | 21, rue Téhéran, à Paris.                                                                              |
| ix, Ernest .. .. .         | Commis des Télégraphes, 22, rue des Carmes, à Cambrai.                                                 |
| David .. .. .              | 27, rue de Rome, à Paris.                                                                              |
| onné, Camille .. .. .      | Constructeur électricien, 27, Grande rue, à Lunéville.                                                 |
| onné, Emile .. .. .        | Ingénieur Civil des Mines, 68, rue Veydt, à Bruxelles.                                                 |
| y, Th. .. .. .             | Constructeur électricien, 4 et 6, rue des Poitevins, à Paris.                                          |
| i, Comte .. .. .           | 6, Boulevard d'Argenson, à Paris.                                                                      |
| Urbain .. .. .             | Directeur des ateliers de M. Dumonlin-Froment, 49, rue St. Placide, à Paris.                           |
| s-Perdonnet, Alf. .. .. .  | Ste. Gal. de la Maison Bregnet, 4, rue Volney, à Paris.                                                |
| no, Lucien .. .. .         | 3, rue Louis-le-Grand, à Paris.                                                                        |
| ner, F. .. .. .            | 70, Boulevard du Montparnasse, à Paris.                                                                |
| t, Edmond .. .. .          | à Châlons-sur-Marne.                                                                                   |
| st, Comte de .. .. .       | Sénateur, 63, Avenue Marceau, à Paris.                                                                 |
| er, Docteur E. .. .. .     | Professeur Agrégé à la Faculté de Médecine, à Lille (Nord).                                            |
| o, Lazare Ange .. .. .     | Contrôleur des Télégraphes à Ajaccio (Corse).                                                          |
| r, Salvador .. .. .        | Calle del Bruch, 85, 3°. Barcelona.                                                                    |
| r-Dufer, — .. .. .         | Dr. en Médecine, 52, rue Richer, à Paris.                                                              |
| net, Charles .. .. .       | Ingénieur des Télégraphes, à Bordeaux.                                                                 |
| is, Edmond .. .. .         | Professeur de Physique, 29, rue Cozette, à Amiens.                                                     |
| urg, Georges .. .. .       | 45, Cours-des-Fossés, à Bordeaux.                                                                      |
| uil, Léon .. .. .          | Président de la Sté. Nle. des Architectes., 32, rue Denfert-Rochereaux, à Paris.                       |
| mps, E. .. .. .            | Wilcome-Villa, 14, Croxted-lane, West Dulwich, Londres.                                                |
| isso, Th. .. .. .          | 82, rue Vanneau, à Paris.                                                                              |
| tet, E. .. .. .            | Ingénieur électricien, constructeur d'instruments de précision, 75, rue Claude-Bernard, à Paris.       |
| ier, Raymond .. .. .       | 75, rue de Courcelles, à Paris.                                                                        |
| sne, Louis .. .. .         | 67, rue du Rocher, à Paris.                                                                            |
| din, P. J. R. .. .. .      | Héliographe, 27, rue Vavin, à Paris.                                                                   |
| nt, G. .. .. .             | 92, rue Lafayette, à Paris.                                                                            |
| ulin-Froment, E. .. .. .   | Constructeur électricien, 85, rue N. D. des Champs, à Paris.                                           |
| n, Lucien .. .. .          | 5, rue Transversale, à Paris.                                                                          |
| n, Louis .. .. .           | Contrôleur des Télégraphes, à Mâcon (Saône et Loire).                                                  |
| y, F. .. .. .              | Ancien élève de l'Ecole Polytechnique, 6, Avenue de la Motte Biquet, à Paris.                          |
| it, Petit .. .. .          | à Cambrai (Nord).                                                                                      |
| , A. .. .. .               | Sous Chef du Laboratoire Municipal, 25, rue d'Ulm, à Paris.                                            |
| , G. .. .. .               | Electricien, 6, rue de Charlebourg, à La Garenne-Colombes, (Seine).                                    |
| y, Felix .. .. .           | Ingénieur, à St. Pierre-lès-Calais.                                                                    |
| r, Clovis .. .. .          | Ingénieur électricien, 17, rue Condorcet, à Lisieux (Calvados).                                        |
| moy, Louis Gustave .. .. . | 4, rue du Châteaux, à St. Omer (Pas-de-Calais).                                                        |
| u, Henri .. .. .           | Président de la Sté. Gle. du Crédit Industriel et Commercial, 66, rue de la Chaussée d'Antin, à Paris. |
| nt, François .. .. .       | 10, rue Mayran, à Paris.                                                                               |
| i, Joseph .. .. .          | Industriel, à Igon (Basses Pyrénées).                                                                  |
| , G. .. .. .               | Professeur, 22, rue Duban à Paris-Passy.                                                               |
| gton, Alfred .. .. .       | Représentant de la Cie. "Eastern Telegraph" à Otrante (Italie).                                        |
| — .. .. .                  | Commis principal des Télégraphes, à Valenciennes (Nord).                                               |
| al, Adolphe de .. .. .     | 42, rue des Mathurins, à Paris.                                                                        |
| er, Charles .. .. .        | Conseiller intime au Dept. des Postes et Télégraphes, 94, Grossbeerenstrasse, à Berlin.                |
| , Thomas .. .. .           | 26, Avenue Trudaine, à Paris.                                                                          |
| , Louis .. .. .            | 62, rue de Saintonge, à Paris.                                                                         |
| ns, Stephen Henri .. .. .  | D.C.L., M.S.Ch.I., 8, Argyll Street, Regent's Street, Londres.                                         |
| tt, Walter .. .. .         | Northern Telegraph Works, Halifax (Angleterre).                                                        |
| ora, Dr. G. B. .. .. .     | à Padoue (Italie).                                                                                     |
| , Frédéric .. .. .         | 133, bis, rue de Rome, à Paris.                                                                        |
| echer, — .. .. .           | Chef de Bureau au Mère. des P. et Télégraphes, rue de Grenelle, à Paris.                               |
| pes, Comte d' .. .. .      | à Charny (Yonne).                                                                                      |
| e, Léonce .. .. .          | Commis principal des Télégraphes, 45, Avenue Duquesne, à Paris.                                        |
| i, — .. .. .               | Inventeur-Constructeur, à Vienne (Isère).                                                              |
| J. J. .. .. .              | à Téhéran (Perse).                                                                                     |

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTIS

|                                          |                                                                                                                 |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Falero, Luis .. .. .                     | 15, Impasse Hélène, à Paris.                                                                                    |
| Faliès, Jacques Alfred .. .. .           | Ingénieur, Ancien Ingénieur de la Cie. de l'Ouest<br>cessionnaire des Chemins de fer d'Intérêt Local<br>Sarthe. |
| Fasso, J. E. .. .. .                     | 12, rue de l'Hôtel-de-Ville, à Lyon.                                                                            |
| Fauconnier, — .. .. .                    | Ingénieur, 2, rue Verte, à Orléans.                                                                             |
| Faugier, Prosper .. .. .                 | 18, Cours de l'Esplanade, à Privas (Ardèche).                                                                   |
| Faure, Camille .. .. .                   | à Saint-Brice (Seine-et-Oise).                                                                                  |
| Faure, Edouard .. .. .                   | Directeur des Postes et Télégraphes, à Gap (Htes. A.                                                            |
| Faure, Pierre .. .. .                    | Place du Champ de Foire, à Limoges.                                                                             |
| Faure-Miller, Roland .. .. .             | 28, rue de Matignon, à Paris.                                                                                   |
| Faure de St. Martial, du .. .. .         | Secrétaire du Bureau Intal. des Admin. télégraphi<br>Berne (Suisse).                                            |
| Fayard, Prosper .. .. .                  | Juge suppléant 4, place Mi-Carême, à St. Etienne (l.                                                            |
| Faye, — .. .. .                          | Membre de l'Institut, 9, Chaussée de la Muette, Passy-<br>Au camp d'Aldershot (Angleterre).                     |
| Fielding, The Hon. Major (Génl. W. H. A. | Ingénieur Electricien, 28, rue St. Lazare, à Paris.                                                             |
| Félix, C. .. .. .                        | à Mulheim sur Rhin.                                                                                             |
| Felton et Guilleaume .. .. .             | 56, rue Olivier-de-Serres, à Paris.                                                                             |
| Ferret, Eugène .. .. .                   | 42, Goodge Street, à Londres.                                                                                   |
| Fesquet, Emile .. .. .                   | 32, Cambridge Gardens, Notting Hill, Londres, W.                                                                |
| Fesser, François .. .. .                 | 89, rue de Sévres, à Paris.                                                                                     |
| Feuquières, Jules .. .. .                | Ingénieur, Expert du Jury d'Electricité en 1878, l                                                              |
| Fichet, A. .. .. .                       | do Berlin, à Paris.                                                                                             |
| Fichot, A. M. .. .. .                    | Commis des Télégraphes, à Rennes (Ille et Vilaine).                                                             |
| Fichot, Jean Louis .. .. .               | à Neuilly (Plaisance).                                                                                          |
| Figuier, Louis .. .. .                   | Publiciste Scientifique, 7, rue Newton, à Paris.                                                                |
| Finck, E. .. .. .                        | 57, rue de Babylone, à Paris.                                                                                   |
| Fischer, Emile de .. .. .                | Capitaine et Chef de Compagnie, 41, Norreg<br>Copenhague.                                                       |
| Fitzgerald, Georges Francis .. .. .      | 40, Trinity College, Dublin.                                                                                    |
| Flogny, Ervin .. .. .                    | 81, rue Lemercier, à Paris.                                                                                     |
| Fortin-Hermann, A. .. .. .               | 138, Bould. du Montparnasse, à Paris.                                                                           |
| Fould, Henri .. .. .                     | 75, Avenue des Champs-Élysées, à Paris.                                                                         |
| Fould, Léon .. .. .                      | 30, rue de Faubourg-Poissonnière, à Paris.                                                                      |
| Fouquemberg, Nestor .. .. .              | Ingénieur des Mines à Vasmès, près Mons (Belgique).                                                             |
| Fournier, Felix P. .. .. .               | Membre de la Commission des Missions Scientifiq<br>Ministère de l'Instruction publique, 119, rue de l           |
| Foustanos, Dr. Jean .. .. .              | Publiciste Scientifique de Grèce, 75, rue Monge, à P                                                            |
| Foxcroft, William Mortimer .. .. .       | 3, Holfort Street, Londres, W.C.                                                                                |
| Frayssinier, J. .. .. .                  | M. S. T. E., 97, Bould. de Sébastopol, à Paris.                                                                 |
| Fréchou, Alexis .. .. .                  | 3, Grande Allée, à Toulouse.                                                                                    |
| Fréchou, Emile .. .. .                   | à Nérac (Lot-et-Garonne).                                                                                       |
| French, John .. .. .                     | Indian Government Telegraphs, à Calicut, Malabar<br>Orientales).                                                |
| Freycinet, Ch. de .. .. .                | Membre de l'Institut, Sénateur, 77, rue de la Faisa<br>à Paris.                                                 |
| Fribourg, — .. .. .                      | Directeur du personnel au Ministère des Postes et<br>graphes, à Paris.                                          |
| Friedel .. .. .                          | Membre de l'Institut, à Paris.                                                                                  |
| Frings, M. .. .. .                       | 106, rue St. Denis, à Paris.                                                                                    |
| Frison (fils), Emile .. .. .             | à Brethenay (Haute-Marne).                                                                                      |
| Frölich, Dr. O. .. .. .                  | 94, Markgrafenstrasse, à Berlin.                                                                                |
| Frouin, André .. .. .                    | Commis des Télégraphes, 11, rue Princesse, à Paris.                                                             |
| Gaiffe, A. .. .. .                       | Ingénieur Electricien 40, rue St. André-des-Arts, à P                                                           |
| Gaiffe (fils), Georges .. .. .           | 40, rue St. André-des-Arts, à Paris.                                                                            |
| Gaignon, Albert .. .. .                  | à Condé-sur-Noireau (Calvados).                                                                                 |
| Galante y Villaranda, José .. .. .       | à Séville (Espagne).                                                                                            |
| Galereau, Léon .. .. .                   | à Laval (Mayenne).                                                                                              |
| Gallardo y Romero, Mariano .. .. .       | Commandant de l'Ecole Centrale de Tir, à Tolde(Esp                                                              |
| Gallet, Auguste .. .. .                  | Sous Directeur des Ecoles Municipales, 1, rue du M<br>à Belfort.                                                |
| Gallice, Georges .. .. .                 | Ancien élève de l'Ecole Polytechnique, 19, rue St. L<br>Châlons sur Marne.                                      |
| Gally, Georges .. .. .                   | Electricien, 5, rue des Apennins, à Paris.                                                                      |
| Gamarre, Abbé .. .. .                    | Fondateur de l'Orphelinat de Rolleville par Montiv<br>(Seine-Inférieure).                                       |
| Gariel, C. M. .. .. .                    | Secrétaire de l'Asson. française pour l'Avanceme<br>Sciences, 39, rue Jouffroy, à Paris.                        |
| Garnier .. .. .                          | Inspecteur pnal. des Télégraphes, 103, rue de Grea<br>Paris.                                                    |
| Garnier, Ch. .. .. .                     | Membre de l'Institut. Architecte de l'Opéra, 90, Bou<br>St. Germain, à Paris.                                   |
| Garnier, Paul .. .. .                    | 16, rue Taitbout, à Paris.                                                                                      |

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| ouse, T. E. . . . .             | 22, Paternoster Row, Londres, E.C.                                                                          |
| rd, Lucien . . . . .            | 18, Warwick Street, Regent Street, Londres.                                                                 |
| er, Jules . . . . .             | Ingénieur des Télégraphes, à La Rochelle (Charente Inférieure).                                             |
| rd, Pierre . . . . .            | Électricien, aux Usines du Creuzot.                                                                         |
| ier, Laurent . . . . .          | 21, rue Longue, à Lyon.                                                                                     |
| ier-Villars, J. A. . . . .      | Libraire éditeur, 55, Quai des Grands Augustins, à Paris.                                                   |
| r, Edouard . . . . .            | 48, rue de l'Université, à Paris.                                                                           |
| r, L. . . . .                   | Manufacturier, ancien Capitaine du génie, à Monthureux-sur-Saône (Vosges).                                  |
| r . . . . .                     | Horloger, à Montfort-l'Amaury (Seine-et-Oise).                                                              |
| ret, Dr. . . . .                | Professeur de physique, à l'école de Médecine, 73, rue de Grenelle, à Paris.                                |
| , John . . . . .                | District superintending Engineer P.T., à Cardiff (England).                                                 |
| berger, Edmond . . . . .        | 24, rue Le Regrattier, à Paris.                                                                             |
| te, Eugène . . . . .            | 42, rue du Chemin Vert, à Paris.                                                                            |
| in, Léon F. . . . .             | 27, rue de la Puroisse, à Versailles.                                                                       |
| oy, Eugène . . . . .            | Industriel, 15, rue Thérèse, à Paris.                                                                       |
| l, Antoine Joseph . . . . .     | Horloger, 5, place St. Lambert, à Liège (Belgique).                                                         |
| i-Lescuyer, J. M. . . . .       | Ingénieur de la Société Anonyme d'Electricité, 8, Passage Cottin (rue Rumey), à Paris.                      |
| in Adrien . . . . .             | Ingénieur hydrographe de la Marine, 13, rue de l'Université, à Paris.                                       |
| , John Dixon . . . . .          | 18, Warwick Street, Regent Street, Londres.                                                                 |
| dan, E. . . . .                 | Boulevard de la Gare, à Narbonne (Aude).                                                                    |
| ux, A. G. . . . .               | (Fabricant de Mastic de Minium), No. 124, rue d'Allemagne, à Paris.                                         |
| l, Fréjus . . . . .             | Électricien, 44, Boulevard Henri IV., à Paris.                                                              |
| l, Charles . . . . .            | Directeur du Laboratoire Municipal, 2, rue Monge, à Paris.                                                  |
| i, F. . . . .                   | Constructeur Electricien, 19, rue de Paris, à Clichy (Seine).                                               |
| let, G. . . . .                 | 33, bis, Avenue de Gennevilliers, à Colombes (Seine).                                                       |
| Emile . . . . .                 | Professeur, 4, rue de la Gaîté, à Paris.                                                                    |
| ne, Francis H. . . . .          | Télégraph et Signal Service, à Ottava (Canada).                                                             |
| zone, John Hall . . . . .       | 17, Pembroke Square, à Londres.                                                                             |
| vski, A. . . . .                | Membre de la Société de Physique, 59, rue de la Butte-Chaumont, à Paris.                                    |
| ner, Antonia . . . . .          | 70, bis, Avenue d'Avroy, à Liège (Belgique).                                                                |
| r, Walter T. . . . .            | Electric Wire & Cable manufacturing, 25, Booth Street, à Manchester.                                        |
| n, P. . . . .                   | Ingénieur en Chef de la Marine, 18, rue du Vieux-Colombier, à Paris.                                        |
| als, Ernest . . . . .           | Administrateur délégué de la Cie. internationale d'éclairage électrique, 235, avenue du Commerce, à Anvers. |
| id, Léonce . . . . .            | Avoué à la Cour d'Appel, 128, rue de Rivoli, à Paris.                                                       |
| shmidt, Docteur . . . . .       | 20, Johannistrasse, à Berlin.                                                                               |
| shmidt, Léopold . . . . .       | 10, rue Murillo, à Paris.                                                                                   |
| vin, Ch. R. . . . .             | Ingénieur, 11, rue Scribe, Paris.                                                                           |
| dorf, S. N. . . . .             | Ingénieur Constructeur d'instruments de précision, 39, rue de Clichy, à Paris.                              |
| n, Francis M. . . . .           | 62, Chippenham Road, London.                                                                                |
| , Théobald . . . . .            | Commis principal des Postes et Télégraphes, à Grenoble (Isère).                                             |
| s, James . . . . .              | à Valentia (Ireland).                                                                                       |
| er, Alphonse . . . . .          | Ingénieur Civil, Electricien, 25, rue Leszno, à Varsovie.                                                   |
| er, Ch. . . . .                 | Directeur technique des Télégraphes Egyptiens, Ingénieur électricien, au Caire (Egypte).                    |
| C. H. . . . .                   | Ingénieur électricien, de "India Rubber" à Persan-Beaumont (Seine et Oise).                                 |
| Robert Haye . . . . .           | Ingénieur en Chef de l'India Rubber and Telegraph Works Co., Silvertown, Londres.                           |
| W. E. . . . .                   | Électricien de la India Rubber Co., Silvertown, Londres.                                                    |
| er, Ulysse . . . . .            | 14, rue Vivienne, à Paris.                                                                                  |
| i, U. . . . .                   | 20, rue Charles de Muysart, à Lille.                                                                        |
| ard, Henri . . . . .            | 4, rue Blanc-Dutrouilly, à Bordeaux.                                                                        |
| r, Docteur . . . . .            | 66, rue St. Lazare, à Paris.                                                                                |
| iero-Gulinelli, Comte . . . . . | à Ferrare (Italie).                                                                                         |
| on, B. . . . .                  | Commis de direction des Postes et Télégraphes de la Corrèze, à Tulle.                                       |
| n, Émile . . . . .              | Constructeur Électricien, 5, rue Montmorency, à Paris.                                                      |
| mmard, Edmond . . . . .         | Ingénieur Electricien, 87, rue Clovis, à Reims (Marne).                                                     |
| mmin, G. . . . .                | 152, Quai de Jemmapes, à Paris.                                                                             |
| mart, Edouard . . . . .         | Commis principal des Télégraphes à Oran (Algérie).                                                          |
| ot . . . . .                    | Ingénieur Mécanicien à Ajaccio.                                                                             |
| folaud, L. . . . .              | à Angoulême.                                                                                                |
| on, Adrien . . . . .            | 22, rue de la Bourse, à St. Étienne (Loire).                                                                |
| on, Emile . . . . .             | Ingénieur des Arts et Manufactures, 11, rue Taithout, Paris.                                                |

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTI

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|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Gumpel, Charles Godfrey .. .. .         | Engineur et Électricien, 190, Westminster Bridge<br>Londres, S.E.                                                  |
| Gutperle, A... .. .                     | Ingénieur, 4, rue de Marseille, à Paris.                                                                           |
| Hallez, Charles .. .. .                 | Lieutenant de Vaisseau, 5, cité d'Antin, à Brest.                                                                  |
| Hallez-d'Arros, Comte Olivier.. .. .    | Fondateur du Journal "l'électricité," 1, rue St. 1<br>Paris.                                                       |
| Hallopeau, Alfred .. .. .               | Ingénieur Civil, Répétiteur à l'École Centrale, 24,<br>Lyon, à Paris.                                              |
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| Hamelin .. .. .                         | Docteur Professeur à la Faculté de Médecine, à<br>pellier (Hérault).                                               |
| Hamilton, (Georges A... .. .            | Western Union Telegraph Co., 197, Broadway, N.Y                                                                    |
| Hamilton-Church, Al. .. .. .            | Uxbridge et District Electric Light Agency, 30, B<br>Road, Londres, N.                                             |
| Hancock, John William .. .. .           | Telegraph Co. de Ireland, Commercial Buildings, Da<br>Dublin.                                                      |
| Hanning, James .. .. .                  | Ingénieur, 20, Avenue de l'Opéra, à Paris.                                                                         |
| Hardret, A. ... .. .                    | à Senlis (Oise).                                                                                                   |
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| Hazarian, Jacques .. .. .               | Secrétaire de l'Assemblée Générale des Sociétés,<br>Arméniennes, à Constantinople.                                 |
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| Hedemann, F. de .. .. .                 | 5, rue Daubigny, à Paris.                                                                                          |
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| Helmholtz, Dr. Von, .. .. .             | Professeur, 16, Neue Wilhelmstrasse, Berlin.                                                                       |
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| Henry, René .. .. .                     | Ingénieur des Téléphones, 21, rue Gay Lussac, à Pa                                                                 |
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| Hittorf, Professeur W. .. .. .          | à Münster (Westphalie)                                                                                             |
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| Hospitalier, Edouard .. .. .            | Rédacteur en Chef du Journal <i>l'Electricien</i> , 6, 1<br>Bella, à Paris.                                        |
| Houzeau, Louis .. .. .                  | Contrôleur des Télégraphes, 11, rue Rousselet, à Pa                                                                |
| Howard, Frank G. .. .. .                | On Klands, Cricklewood, à Londres.                                                                                 |
| Hue, Auguste .. .. .                    | Rédacteur au Ministère des Travaux Publics, 2<br>Delambre, à Paris.                                                |
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| Humbert, Docteur A... .. .              | 3, rue Jacquart (Xie. Arrondissement), à Paris.                                                                    |
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| Hurel (Abbé) Théodore Joseph.. .. .     | Curé à Lieusaint (Seine-et-Marne).                                                                                 |
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| Ideville, Comte d' .. .. .              | rue Notre-Dame de Lorette, à Paris.                                                                                |
| Infreville, Georges d' .. .. .          | Electricien de la "Western Union Telegraph Co.<br>West 43rd Street, à New York.                                    |
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| Ispototoff, Nicolas .. .. .             | Directeur des Télégraphes de Ville, 14, rue des Po<br>St. Petersbourg.                                             |
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| Itasse-Geuffron, Léon.. .. .            | 29, rue des Martyrs, à Paris.                                                                                      |



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| s, — .. .. .                              | Sous Inspecteur des Postes et Télégraphes, à Tunis.                                                   |
| s, Ernest .. .. .                         | Bibliothécaire au Ministère des Postes et Télégraphes, 26, rue Bertrand, à Paris.                     |
| n, Eugène .. .. .                         | Contrôleur du Sec. Technique des Télégraphes, 66, rue Daguerre, à Paris.                              |
| , — .. .. .                               | Membre de l'Institut, 2, Carrefour de l'Odéon, à Paris.                                               |
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| rer, Ch. .. .. .                          | 6, rue du Louvre, à Paris.                                                                            |
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| — .. .. .                                 | Constructeur d'Instruments de précision à Delft (Pays-Bas).                                           |
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| , de .. .. .                              | Ingénieur en Chef des Pts. et Chaussées, 51, rue de Varennes, à Paris.                                |
| sière, — .. .. .                          | à Grenoble (Isère).                                                                                   |
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| ne, — .. .. .                             | Ingénieur en Chef du Sec. Télégraphique, à Constantinople.                                            |
| abrade, Justin .. .. .                    | Commis des P. et Télégraphes à Capdonac gare (Aveyron).                                               |
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| ge, Ernest .. .. .                        | Électricien, Hôtel Monnet, à Grenoble (Isère).                                                        |
| re, Auguste .. .. .                       | Imprimeur, 9, rue du Fleurus, à Paris.                                                                |
| , William .. .. .                         | Electricien, 219, Boulevard d'Enfer, à Paris.                                                         |
| ille, Emile .. .. .                       | Ingénieur à l'Usine électro métallurgique de Montredon près Marseille.                                |
| é, Alfred Louis .. .. .                   | Dr. en Médecine, 40, Boulevard du Montparnasse, à Paris.                                              |
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| Lallement, Maurice .. .. .      | Ingénieur de la Société des Téléphones, 48, rue Paris.                                                                                |
| Lamothe, Ch. .. .. .            | Receveur des Télégraphes, à Pauillac (Médoc) (Gironde).                                                                               |
| Lamy, Ernest J. B. .. .. .      | 1, Place des Jacobins, à Lyon.                                                                                                        |
| Lan, Charles .. .. .            | Inspecteur Génl. des Mines, 234, Bd. St. Germain.                                                                                     |
| Landur, N. .. .. .              | Docteur en Médecine, Licencié ès sciences, rue Orléans.                                                                               |
| Lang, Irénée .. .. .            | à Schlestadt (Alsace).                                                                                                                |
| Langdon, William Edward .. .. . | Supérintendant Engineer of Telegraph Départ. Grove Terrace, à Londres.                                                                |
| Laporte, Louis Pascal .. .. .   | 28, rue d'Orléans, à Lorient (Morbihan).                                                                                              |
| Lapparent, de .. .. .           | Ingénieur des Mines, 3, rue Tilsitt, à Paris.                                                                                         |
| Lardy, Augusto .. .. .          | Ingénieur à Fourchambault (Nièvre).                                                                                                   |
| La Rivière, A. de .. .. .       | à Bordeaux.                                                                                                                           |
| Larochole, G. V. .. .. .        | Electricien, 11, Boulevard de Clichy, à Paris.                                                                                        |
| Larroque, Firmin .. .. .        | Physicien, 42, Avenue Herbillon, à St. Mandé (Seine).                                                                                 |
| Lartigue, Henri .. .. .         | Directeur de la Société des Téléphones, 41, rue Martin, à Paris.                                                                      |
| La Taille, I. de .. .. .        | Directeur Ingénieur des Télégraphes, à Orléans (Loiret).                                                                              |
| Latchinoff, Dimitry .. .. .     | Professeur à l'Institut des Bois et Forêts, à St. Pétersbourg.                                                                        |
| Lattès, Eugène .. .. .          | Ingénieur de la Société Lyonnaise de Constructions électriques et de Lumière Electrique, 19, Boulevard Italiens, à Paris.             |
| Laugaudin, de .. .. .           | Ingénieur en Chef du Cadastre d'Egypte au Caire (Egypte).                                                                             |
| Laumonnier, Jules .. .. .       | 5, rue St. Etienne, à Angers (Maine-et-Loire).                                                                                        |
| Laurens, Camillo .. .. .        | Ingénieur, 82, rue Taitbout, à Paris.                                                                                                 |
| Laurent, Jules .. .. .          | 38, Allées de Tourny, à Bordeaux.                                                                                                     |
| Lauriol, Jules .. .. .          | 64, rue Caumartin, à Paris.                                                                                                           |
| Laval, — .. .. .                | Contrôleur des Télégraphes, à Bar-le-Duc.                                                                                             |
| Lavallée, Jean .. .. .          | Administrateur de la Société l'Advertisseur Electrique, 44, Boulevard Hausmann, à Paris.                                              |
| Laverchère, Edmond .. .. .      | 14, rue St. Georges, à Roubaix (Nord).                                                                                                |
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| Le Baron .. .. .                | Ingénieur Electricien, 44, rue Boursault, à Paris.                                                                                    |
| Lebeauapin, — .. .. .           | Chimiste 1, rue des Irlandais, à Nantes.                                                                                              |
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| Leguay, E. .. .. .              | Electricien, 79-81, rue de la Tombe-Issoire, à Paris.                                                                                 |
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| Le Maréchal (fil), E. .. .. .   | à St. Servan (Ille et Vilaine).                                                                                                       |
| Lemerchier de Jauvelle .. .. .  | Directeur de l'Institut Polyglotte, 16, rue Grange-Francoise, à Paris.                                                                |
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| Le Moine .. .. .                | Directeur des Postes et Télégraphes, à Epinal (Vosges).                                                                               |
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| Lennep, H. M. J. Van .. .. .    | Ingénieur electricien, 3, Frédérikspark, à Harlem.                                                                                    |
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| Lesourd, Paul .. .. .           | Président de la Chambre de Commerce de Tours, à Tours.                                                                                |
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| Lesseps Ferdinand de .. .. .    | Membre de l'Institut, 7, rue St. Florentin, à Paris.                                                                                  |
| Lestelle, X. .. .. .            | Sous Inspecteur des Postes et Télégraphes, à Marseille.                                                                               |
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| waite, William .. .. .              | à Reims (Marne).                                                                                            |
| mier des Plantes, Comte de Serres.. | (Docteur) Directeur de l'Institut Electro-Homœopathique, 45, rue de Lyon, à Lyon.                           |
| ud, Henri .. .. .                   | à Ratacolo (Grèce).                                                                                         |
| ann, Docteur H., .. .. .            | Chimiste Electricien, Nelson Wharf, Milwall, Londres, E.                                                    |
| anu, Louis .. .. .                  | Directeur de l'Agence Générale d'électricité, 11, rue Montyon, à Paris.                                     |
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| st, C. .. .. .                      | 5, rue Debelleyne, à Paris.                                                                                 |
| ann, G. .. .. .                     | Professeur à la Faculté des Sciences de Paris.                                                              |
| Comte Pompée de .. .. .             | 26, rue Spiga, à Milan (Italie).                                                                            |
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| iberg, Auriste .. .. .              | Dr. en Médecine de la Faculté de Paris, 15, rue Auber, à Paris.                                             |
| , Maurice .. .. .                   | Membre de l'Institut S. Directeur de l'Observatoire, 6, rue Cassini, à Paris.                               |
| etti, Jules .. .. .                 | Inspecteur des Télégraphes, à Florence (Italie).                                                            |
| Jacques .. .. .                     | 5, Place des Vosges, à Paris.                                                                               |
| 1, J. G. .. .. .                    | 1, Wardrobe Place, Doctors' Commons, Londres, E.C.                                                          |
| , Louis .. .. .                     | Ingenieur, à Bellegarde (Ain).                                                                              |
| F. .. .. .                          | Ingenieur en Chef des Ponts et Chaussées, Directeur du Service des Phares, 7, rue Nouvelle, Paris.          |
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| 7, Frank .. .. .                    | District Manager, The National Telephone Co., 13, Panmure Street, Dundee.                                   |
| Max .. .. .                         | Ingenieur 38, Avenue de l'Opéra, à Paris.                                                                   |
|                                     |                                                                                                             |
| y, J. W. .. .. .                    | De la Compagnie des Câbles Mackay-Bennett, 9, rue de Tilsit, à Paris.                                       |
| nzie, J. Kenneth, D. .. ..          | 18, Warwick Street, Regent Street, Londres.                                                                 |
| fab, Donald .. .. .                 | Ingenieur electricien des Usines de la Société Générale des Téléphones, à Bezons (Seine-et-Oise).           |
| , Paul.. .. .                       | Inspecteur du Contrôle des Postes et Télégraphes, 34, Avenue de Villiers, à Paris.                          |
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| ard, P. .. .. .                     | 6, place d'Auvergne, à Brest (Finistère).                                                                   |
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| Baron de .. .. .                    | 23, rue Montbazou, à Bordeaux                                                                               |
| rstjerna-Williams, Morgan J. ..     | B.A. Cambridge, Killay House, à Killay (Glamorganshire), England.                                           |
| oux, L. .. .. .                     | Agent special des Télégraphes, 71, rue Caumartin, à Paris.                                                  |
| t, Félix .. .. .                    | Ingenieur, 41, rue de Douai, à Paris.                                                                       |
| , Genet .. .. .                     | Commis des Télégraphes, 52, rue St. Placide, à Paris.                                                       |
| n, Alexis-Louis .. .. .             | Professeur de physique, à Rambervillers (Vosges).                                                           |
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| é, — .. .. .                        | Président de la Sté. des Ingenieurs Civils, 30, rue Chaptal, à Paris.                                       |
| egay, Alphonse .. .. .              | Ingenieur, Directeur du réseau Téléphonique, 11, Quai des Célestins, à Lyon.                                |
| lac, Paul .. .. .                   | Télégraphiste, 5, rue Jaubert, à Marseille.                                                                 |
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| Davy .. .. .                        | Directeur de l'Observatoire de Montsouris, à Paris.                                                         |
| te, Charles .. .. .                 | Ingenieur Civil, Faubourg, St. Claude, à Besançon (Doubs).                                                  |
| g, L., et E. Mertz .. .. .          | De Paris, à Bâle (Suisse).                                                                                  |
| 1, — .. .. .                        | Fabricant d'Horlogerie, et de mouvements pour la Télégraphie, à St. Nicolas d'Aliermont (Seine-Inférieure). |
| 1, Louis de .. .. .                 | à Montraboch, près Lezignan (Aude).                                                                         |
| iez, Ramon.. .. .                   | l'professeur de Physique et de Chimie, à Onâ, province de Burgos (Espagne).                                 |
| iy, J. L. .. .. .                   | Caoutchouc et Gutta Percha Electriques, 34, rue de Franco, à Bruxelles.                                     |
| y, William Henry .. .. .            | à Twyford, Berks (Angleterre).                                                                              |

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| Masson, Georges .. .. .                | Editeur, 120, Boulevard St. Germain, à Paris.                                                   |
| Masson, Jules .. .. .                  | 25, rue de Senlis, à Asnières.                                                                  |
| Mathieu, Le Commandant .. .. .         | Directeur de l'Ecole des Défenses Sous-m<br>Boyardville (Ile d'Oléron).                         |
| Maubeuge, Baron Edward Lavelaine de .. | 29, Boulevard du Château, Neuilly sur Seine.                                                    |
| Mauriceau, Alexandre .. .. .           | à St. Jean des Mauvrets, près Briasac (Maine et L                                               |
| Mayer, Edmond .. .. .                  | Ingénieur Civil, 5, rue Louis-le-Grand, à Paris.                                                |
| Mayer, Ferdinand .. .. .               | 65, Avenue des Champs-élysées, à Paris.                                                         |
| Maus, Henri .. .. .                    | 41, rue de Naples, à Bruxelles.                                                                 |
| Meaux, de .. .. .                      | Chef de Bureau au Mère. des Postes et Télégraphes                                               |
| Meeus, Jules de .. .. .                | Directeur du "Moniteur Industriel," 46, rue de l                                                |
|                                        | Paris.                                                                                          |
| Méault, François .. .. .               | Commis principal des Télégraphes, à Rennes.                                                     |
| Ménier, H. .. .. .                     | Fabricant de Câbles Electriques, 7, rue du Théâtre                                              |
| Méniers d'Angers, Docteur P. .. .. .   | 10, Boulevard Bonne-Nouvelle, à Paris.                                                          |
| Mensbrughe, V. Van der .. .. .         | Professeur à l'Université de Gand, à Gand.                                                      |
| Mercadier, E. .. .. .                  | Directeur des études de l'école Polytechnique,<br>Descartes, à Paris.                           |
| Mercier, — .. .. .                     | Inspecteur des Postes et Télégraphes, à Tulle (Cor                                              |
| Mercier, Lacombe .. .. .               | Inspecteur des Postes et Télégraphes, à I<br>(Dordogne).                                        |
| Meritens, A. de .. .. .                | Ingénieur et Constructeur Electricien, 44, rue Boe<br>Paris.                                    |
| Merman, Maurice .. .. .                | 11 bis, Allées de Chartres, à Bordeaux.                                                         |
| Mersanne, Ernest de .. .. .            | Ingénieur Electricien, 108, Boulevard Arago, à P                                                |
| Meyer, Gaspard .. .. .                 | 51, Boulevard de La Chapelle, à Paris.                                                          |
| Michaëls, Porter J. .. .. .            | 45, Avenue de l'Opéra, à Paris.                                                                 |
| Michalias, R. .. .. .                  | Pharmacien de 1 <sup>re</sup> classe à Ambert (Puy-de-Dôme                                      |
| Mignon, C. .. .. .                     | Docteur en Médecine, 41, rue de la Rochefoucauld                                                |
| Millot-Carpentier, G. .. .. .          | Docteur en Médecine, Château de Montécouvez,  <br>veceur (Oise).                                |
| Miot, Georges .. .. .                  | Élève à l'école Centrale, 63 bis, rue du Rocher, à l                                            |
| Moigno (abbé) .. .. .                  | Fondateur du Journal "Cosmos," 2, rue Stras<br>St. Denis (Seine).                               |
| Moineau (fils), H. .. .. .             | Fonderie de Fer, 10, rue Lacharrière, à Paris.                                                  |
| Moll, — .. .. .                        | Contrôleur des Télégraphes, 4, rue Rollon, à Roue                                               |
| Moncel, Comte Théodore du .. .. .      | Membre de l'Institut, 7, rue de Hambourg, à Pari                                                |
| Mondos, Robert .. .. .                 | Directeur de la Cie. française de l'Electricité, 47 b<br>vard Eugène, à Neuilly-sur-Seine.      |
| Monnier, D. .. .. .                    | Ingénieur, 57, rue Pigalle, à Paris.                                                            |
| Monot, Eugène .. .. .                  | Et. de Cristaux, 84, rue de Paris, à Pantin (Seine)                                             |
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| Monteynard, de .. .. .                 | 44, rue Boursault, à Paris.                                                                     |
| Monthiers, Maurice .. .. .             | 70, rue d'Amsterdam, à Paris.                                                                   |
| Monvoisin, Albert .. .. .              | 23, rue Dunkerque, à Paris.                                                                     |
| Mora, Camille .. .. .                  | Constructeur Electricien, 95, Boulevard Richard-<br>Paris.                                      |
| Mora y Bacardi, Orestes de .. .. .     | Telegrafos à Barcelone (Espagne).                                                               |
| Morau (fils), Frédéric .. .. .         | Élève de l'Ecole des Mines, 98, rue de la Victoire,                                             |
| Morges — .. .. .                       | Capitaine du Génie, à Alger.                                                                    |
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| Morin, H. Paul .. .. .                 | 70, rue des Batignolles, à Paris.                                                               |
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| Morton, L. P. .. .. .                  | Ministre plénipotentiaire des Etats Unis d'A., 3,  <br>Etats Unis, à Paris.                     |
| Mosenthal, Charles de .. .. .          | Electricien, Consul Général de la République d'Or<br>Meissonnier, à Paris.                      |
| Mouchel, J. O. .. .. .                 | Fabricant de Cuivre pour Télégraphie, 10, rue C<br>à Paris.                                     |
| Moulton, John Fletcher .. .. .         | F.R.S., 74, Onslow Gardens, Londres, S.W.                                                       |
| Mourlon, Charles .. .. .               | Directeur des Ateliers de Construction Mourlon et<br>Avenue Louise, à Bruxelles.                |
| Moussette, Charles Edouard .. .. .     | 73, Boulevard-Suchet, à Paris.                                                                  |
| Muller, X. .. .. .                     | Ingénieur, sous Directeur des Etablissements L.<br>Cie., à Angoulême (Charente).                |
| Muller, Emile .. .. .                  | Ingénieur, Professeur à l'Ecole Centrale, Pré<br>Conseil du Génie Civil, 20, Avenue du Trocadèr |
| Munier, Claude Joseph .. .. .          | Télégraphe Central, à Rouen, (Seine Inférieure).                                                |
| Mutel Auguste .. .. .                  | Employé des Télégraphes, 60, rue Lecourbe, à Pa                                                 |
|                                        |                                                                                                 |
| Naeher & Cie. de .. .. .               | à Willebruck (Belgique).                                                                        |
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| avid               | .. | .. | .. | .. | .. | Ingénieur, Chef du Laboratoire d'essais au Chemin de fer de l'Est, 98, Faubourg Poissonnière, à Paris.                                      |
| ugène              | .. | .. | .. | .. | .. | 15, Avenue Hoche, à Paris.                                                                                                                  |
| Alexandre          | .. | .. | .. | .. | .. | Ingénieur, Chimiste et Docteur-ès-sciences, Délégué ed Belgique au Congrès International des Electriciens à Paris en 1881, à Liège.         |
| Emile              | .. | .. | .. | .. | .. | Docteur, 43, rue de Châteaudun, à Paris.                                                                                                    |
| -                  | .. | .. | .. | .. | .. | Contrôleur Chef des Télégraphes à la Cie. des Chemins de fer de l'Ouest, 13, rue Charles Emmanuel, à Asnières (Seine).                      |
| rles François      | .. | .. | .. | .. | .. | 11, rue de Laromiguière, à Paris.                                                                                                           |
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| Georges            | .. | .. | .. | .. | .. | Ingénieur Civil, à Camarésa, près Laurium (Grèce).                                                                                          |
| C. A.              | .. | .. | .. | .. | .. | 8, rue Say, à Paris.                                                                                                                        |
|                    | .. | .. | .. | .. | .. | Chef de la Division Technique de l'Administration de Suède, à Stockholm (Suède).                                                            |
| r. Ph. Eugène      | .. | .. | .. | .. | .. | 17, Charlton Villas, Old Charlton (Kent), England.                                                                                          |
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| sky, Thomas        | .. | .. | .. | .. | .. | à St. Pétersbourg (Russie).                                                                                                                 |
| i, Charles Edouard | .. | .. | .. | .. | .. | Boulevard de Versailles, à Montretout, St. Cloud (Seine).                                                                                   |
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| Carlos de          | .. | .. | .. | .. | .. | 13, Costanilla de los Angeles, à Madrid.                                                                                                    |
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| bert               | .. | .. | .. | .. | .. | Chimiste, 9, rue de Pontoise, à Paris.                                                                                                      |
| gène               | .. | .. | .. | .. | .. | 6, rue aux Nampes, à Caen.                                                                                                                  |
| rien de            | .. | .. | .. | .. | .. | Professeur de physique, Membre de l'Académie Royale des Sciences de Lisbonne, &c., au Château de Campo-Bello à Gaya, près Porto (Portugal). |
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| Le Docteur         | .. | .. | .. | .. | .. | 210, rue de Rivoli, à Paris.                                                                                                                |
| ..                 | .. | .. | .. | .. | .. | Industrie électrique, 9, rue Castellane, à Paris.                                                                                           |
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| lphonse            | .. | .. | .. | .. | .. | Président de la Société Géologique, 56, rue des Sts. Pères, à Paris.                                                                        |
| H. de              | .. | .. | .. | .. | .. | Publiciste Scientifique, Villa des Pins, Parc-aux-Princes, Boulogne-sur-Seine                                                               |
| Edward J.          | .. | .. | .. | .. | .. | 125, Queen's Road, Brownswood Park, à Londres.                                                                                              |
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| enri               | .. | .. | .. | .. | .. | Professeur au Lycée Louis-le-Grand, 21, rue Monge, à Paris.                                                                                 |
| le Lastelle, J.    | .. | .. | .. | .. | .. | 61, rue Caumartin, à Paris.                                                                                                                 |
| Horace             | .. | .. | .. | .. | .. | Membre de Sociétés des études Scientifiques, à Madou, par Blois (Loir-et-Cher).                                                             |
| ac                 | .. | .. | .. | .. | .. | Professeur de Physique et de Chimie, à San-Fernando (Espagne).                                                                              |
| ouis               | .. | .. | .. | .. | .. | Professeur à la Faculté des Sciences de l' Université de Liège, 101, rue St. Esprit, à Liège (Belgique).                                    |
| t, A.              | .. | .. | .. | .. | .. | Commis des Télégraphes, à Châlons-sur-Marne (Marne).                                                                                        |
| s)                 | .. | .. | .. | .. | .. | Mécanicien, à Avallon (Yonne).                                                                                                              |
| ..                 | .. | .. | .. | .. | .. | Mécanicien, 134, rue Legendre, à Paris.                                                                                                     |
| scar               | .. | .. | .. | .. | .. | Directeur des Postes et Télégraphes, à Lons-le-Saulnier (Jura).                                                                             |
| i, M.              | .. | .. | .. | .. | .. | Ingénieur, à Choisy-le-Roi (Seine).                                                                                                         |
| Donis              | .. | .. | .. | .. | .. | Ingénieur des Ponts et Chaussées., 104, Boulevard Haussmann, à Paris.                                                                       |
| un Marie Albert    | .. | .. | .. | .. | .. | Homme de Lettres au Château de Cysoing, près Lille (Nord).                                                                                  |
| -                  | .. | .. | .. | .. | .. | Chef de Bataillon, du Génie, à Ajaccio (Corse).                                                                                             |
| Ch. R.             | .. | .. | .. | .. | .. | Ingénieur, 33, Avenue St. Pierre, à Béziers (Herault.)                                                                                      |
| H.                 | .. | .. | .. | .. | .. | Ingénieur de la Cie. P. L. M., à Briançon (Hautes-Alpes).                                                                                   |
| ..                 | .. | .. | .. | .. | .. | 30, rue des Envierges, à Paris.                                                                                                             |
| ert                | .. | .. | .. | .. | .. | 85, rue St. Maur, à Paris.                                                                                                                  |
| ustave             | .. | .. | .. | .. | .. | 168, rue de Charenton, à Paris.                                                                                                             |
| ales               | .. | .. | .. | .. | .. | Commis du Service Technique des Télégraphes, 3, rue de Toulouse, à Rennes.                                                                  |
| ierre              | .. | .. | .. | .. | .. | 11, rue St. Vincent de Paul, à Grenoble (Isère).                                                                                            |
| lfred              | .. | .. | .. | .. | .. | 5, rue Caumartin, à Paris.                                                                                                                  |
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| Pic-Pâris, Albert ..            | 62, Avenue de l'Alma, à Paris.                                                                       |
| Picper, H ..                    | à Liège (Belgique).                                                                                  |
| Pierre, Dominique ..            | 72, rue du Bois-de-Cros, à Clermond-Ferrand (Dôme).                                                  |
| Pierret, Albert ..              | 50, Boulevard Malsherbes, à Paris.                                                                   |
| Piotra-Santa, Docteur de ..     | Rédacteur en Chef du <i>Journal d'Hygiène</i> 54, Wagram, à Paris.                                   |
| Figuet, Jacques ..              | Négociant et agent d'assurances, à Segré (Maine et                                                   |
| Pindray, Charles de ..          | Pharmacien, Cours Michel Montaigne, à Périgord (dogne.)                                              |
| Pissarewsky, Nicolas ..         | Inspecteur-général des Télégraphes russes, 18, rue skaia, à St. Petersbourg.                         |
| Place, Henri de ..              | Ingénieur, au Château de Rochebelle, à Alais (Gar                                                    |
| Planté, Gaston ..               | 56, rue des Tournelles, à Paris.                                                                     |
| Plawski, Docteur Alexandre ..   | Conseiller de Cour à St. Pétersbourg, 22, rue Kiro                                                   |
| Poillon, L. ..                  | Ingénieur des Arts et Manufactures, à Clamart (Se                                                    |
| Poirer, Marius ..               | à Tarare (Rhône).                                                                                    |
| Poirson, Charles Ernest ..      | 14, Boulevard St. Marcel, à Paris.                                                                   |
| Polignac, Prince Camille de ..  | 63, Boulevard Péreire, à Paris.                                                                      |
| Pollard, Jules ..               | Ingénieur des Constons. navales, 118, rue d'Assas                                                    |
| Ponsinet, Paul ..               | Employé des Télégraphes, 8, rue des Chemins (Bois-Colombes (Seine).                                  |
| Pontalba, E. de ..              | 15, rue de la Chaussée d'Antin, à Paris.                                                             |
| Porgès, Charles ..              | Président de la Cie. Continentale <i>Edison</i> 81, rue 1 à Paris.                                   |
| Porte, L. ..                    | 30, rue Jacques, Dulud, à Neuilly-sur-Seine.                                                         |
| Postel-Vinay ..                 | Constructeur Electricien, 38, rue Vanneau, à Paris                                                   |
| Pouzet, Gustave ..              | Opticien Electricien, 8, rue de Mont Blanc, à (Suisse.)                                              |
| Poyet, Louis ..                 | Dessinateur Graveur, 17, rue du Louvre, à Paris.                                                     |
| Precece, William Henry ..       | F.R.S., M. Inst.C.E., Gothic Lodge, à Wimbledon (E                                                   |
| Prove, Laurent ..               | 3, rue de Grammont, Paris.                                                                           |
| Prokchine, Paul ..              | Collaborateur du Journal Russe <i>l'Electricité</i> , m Gymnase, à Kostroma (Russie).                |
| Puisseaux, Fernand de ..        | à Baudour (Belgique).                                                                                |
| Puydt, Paul de ..               | Ingénieur, 24, rue du Grand Hospice, à Bruxelles.                                                    |
| Quindry, — ..                   | Professeur de Physique, à Honfleur (Calvados).                                                       |
| Radiguet (fils) ..              | Electricien, 15, Boulevard des filles du Calvaire, à                                                 |
| Radcliff, William ..            | 3, Abchurch Lane, Lombard Street, London.                                                            |
| Radisson, Raymond ..            | Affineur de Métaux précieux, 7, rue de la Préf Lyon.                                                 |
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| Raffard, Nicolas Jules ..       | 16, rue Vivienne, à Paris.                                                                           |
| Rambeaud, René ..               | 4, Grande rue, à Parthenay (Deux Sèvres).                                                            |
| Ranque, Docteur, P. ..          | Membre de la Société Française de physique, Champollion, à Paris.                                    |
| Raoux, Léon ..                  | Ingénieur Civil, à Lausanne (Suisse).                                                                |
| Rau, Louis ..                   | Administrateur-Délégué de la Société <i>Edison</i> , 7, r chanan, à Paris.                           |
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| Reboul, Pierre Eugène Firmin .. | 48, rue Laffitte, à Paris.                                                                           |
| Reck, A. B. ..                  | Ingénieur Constructeur, 3, Turesensgade, Co (Danemark)                                               |
| Redier (fils), — ..             | Fabricant d'Horlogerie et de mouvements pour graphie, à St. Nicolas d'Aliermont (Seine-In            |
| Redonot, José ..                | à Santander (Espagne).                                                                               |
| Rehm, François Jules ..         | Commis principal des Télégraphes, rue de la Par à Versailles.                                        |
| Reith, Frédéric Macrae ..       | Engineer's Département G. J. N., à Edimbourg (E                                                      |
| Reinach, Jacques, Baron de ..   | 20, rue Murillo, à Paris.                                                                            |
| Reizabal, François ..           | 2, 3 <sup>e</sup> Chinchilla, à Madrid (Espagne.)                                                    |
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| Renard, Lucien Henri Antoine .. | Contôleur du Service Technique des Télégraphes, Parigny, à Nevers, Nièvre.                           |
| Renoir, — ..                    | Receveur des Postes et Télégraphes, 45, Boul Belleville, à Paris.                                    |
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| Richard, M. . . . .                       | Administrateur délégué de la Société Générale des Téléphones, 4, rue d'Aboukir, à Paris.                                   |
| Richen (abbé), Laur . . . . .             | à Motherwell (Ecosse).                                                                                                     |
| Ricome, Pierre Joseph . . . . .           | Pharmacien de 1re Classe, à Marsillargues (Hérault).                                                                       |
| Riffaut, — . . . . .                      | 1, rue Andrieux, Paris.                                                                                                    |
| Billiet, Albert . . . . .                 | Professeur de Physique au Gymnase de Genève, 9, rue du Stand, à Genève.                                                    |
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| Roberts, Evæen . . . . .                  | L.R.C.S. Edimb., L.S.A. Lond., 41, Grove Road, St. John's Wood, London, N.W.                                               |
| Robbillot, Louis . . . . .                | Contrôleur des Télégraphes, au Chemin de fer de l'Est, à Reims.                                                            |
| Robin, Ch. . . . .                        | Membre de l'Institut, à Paris.                                                                                             |
| Rochetin, Joseph . . . . .                | à Nice (Alpes Maritimes).                                                                                                  |
| Rodary, Ferdinand . . . . .               | Ingénieur Civil des Mines, sous Inspecteur du Service Télégraphique au Chemin de fer de P.L.M., 4, rue Jean Bart, à Paris. |
| Rodde, Ferdinand . . . . .                | Membre de la Société de Physique, 7, rue du Delta, à Paris.                                                                |
| Rodocanachi, Emmanuel . . . . .           | 42, Avenue Gabriel, à Paris.                                                                                               |
| Roger, Joseph . . . . .                   | Chef d'Institution, 161, rue St. Jacques, à Paris.                                                                         |
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| Rojas, Francisco de . . . . .             | Directeur Scientifique de la revue illustrée, "La Electricidad," 10, Ramba de Canaletas, à Barcelone (Espagne).            |
| Rosenbusch, Le Chevalier Edward . . . . . | Ingénieur Civil, Medan. Ext. Telegraph Co., à Malte.                                                                       |
| Rosetti, François . . . . .               | à l'adoue (Italie.)                                                                                                        |
| *Rothschild, Baron Alphonse de . . . . .  | 2, rue St. Florentin, à Paris.                                                                                             |
| *Rothschild, Baron Edmond de . . . . .    | 21, rue Laffitte, à Paris.                                                                                                 |
| *Rothschild, Baron Gustave de . . . . .   | 23, Avenue Marigny, à Paris.                                                                                               |
| Rotrou, René de . . . . .                 | 54, rue Taitbout, Paris.                                                                                                   |
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| Roulx, Pierre-Honoré . . . . .            | Receveur des Postes et Télégraphes, 121, Boulevard Haussmann, à Paris.                                                     |
| Roumieu, H. . . . .                       | 38, Allées de Tourny, à Bordeaux.                                                                                          |
| Rousse, J. . . . .                        | Professeur de Physique, 9, Place Marengo, à St. Etienne.                                                                   |
| Rousseau, E. . . . .                      | Professeur à l'Université libre et à l'école Me., à Bruxelles.                                                             |
| Roussilhe, Marie-Louis . . . . .          | Pharmacien à Castelnandary (Aude).                                                                                         |
| Rouvier, Maurice . . . . .                | Député, 152, rue de la Tour-Passy, à Paris.                                                                                |
| Roux, Guillaume-Elidore . . . . .         | Commis du Service Technique des Télégraphes, 2, rue de la Cathédrale, Nevers.                                              |
| Roy, Gustave . . . . .                    | Ancien Président de la Chambre de Commerce de Paris, 1 bis, Avenue Hoche, à Paris.                                         |
| Royer (fils), L. . . . .                  | à Jarnac (Charente).                                                                                                       |
| Ruggiero-Fabri, Docteur . . . . .         | Chevalier de la Couronne d'Italie, à Ravenne (Italie).                                                                     |
| Sabine, Robert C. L. . . . .              | 3, Great Winchester Street, London, E.C.                                                                                   |
| Sabourain, Jean-Alibey . . . . .          | Commis principal des Télégraphes Secrétaire du Comité d'initiative, 36, Boulevard du Temple, à Paris.                      |
| Salis, P. de . . . . .                    | Inspecteur à Coire (Suisse).                                                                                               |
| Salus, — . . . . .                        | Chef de Bureau au ministère des Postes et Télégraphes, 99, rue de Grenelle, à Paris.                                       |
| Salva, Louis . . . . .                    | Docteur, à Adge (Hérault).                                                                                                 |
| Sanna-Solaro, J.M., S.I., . . . . .       | 43, Cours de Magenta, à Gènes.                                                                                             |
| Santelli, Ernest . . . . .                | Ingénieur des Mines, à Ivrea (Piémont) Italie.                                                                             |
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 Barda, Dr., rue Blanche, 49, Paris.  
 Bonnet, Q., boulevard des Filles-du-Calv  
 Paris.  
 Boudet, Dr., rue d'Ialy, 4, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Breton frères, rue des Ecoles, 52, Paris.  
 Brewer frères, rue St. André-des-Arts, 43,  
 Bunon, rue Vieille-du-Temple, 27, Paris.  
 Chardin, Charles, rue de Châteaudun, 5, P  
 Courtot, C., rue Caumartin, 73, Paris.  
 De Bar, rue Nationale, 231, Lille.  
 Desruelles, L. avenue Percier, 8, bis, Paris  
 Dubos, Ch., avenue de la Motte-Piquet  
 Paris.  
 Ducretet, E., et Cie., rue Claude-Bernar  
 Paris.  
 Dupré, rue Campagne-Première, 5, Paris.  
 Encausse et Canesie, rue Rochecouart, 57,  
 Feuquières, J., rue de Sèvres, 89, Paris.  
 Fosse, rue de l'Hôtel-de-ville, 12, Lyon.  
 Gaiffe, A., rue St. André-des-Arts, 40, 1  
 Gerboz, rue des Ecoles, 52, Paris.  
 Gloesener, die. A., Avenue d'Avroy, 76  
 Liège  
 Guérin, F., rue du Temple, 55, Paris.  
 Le Brun, H., rue Pastourelle, 32 et 34, Pa  
 Loret, rue Mignon, 5, Paris.  
 Mora, boulevard Richard-Lenoir, 93, Paris  
 Oré et Chagnoleau, rue du Palais-de-Justi  
 Bordeaux.  
 Pulvermacher, J. L., rue Chabrol, 69, Par  
 Trouvé, G., rue Vivienne, 14, Paris.  
 Vert, C. X., passage Bouchardy, 20, Paris.

**Appareils servant aux mesure  
 électriques.**

*E.—Electrical Testing Instruments.*

*G.—Probirinstrumente für Electricität*

Armengaud aîné Ch. Eug., rue Saint Séb  
 45, Paris.  
 Bigeon, rue de la Tombe-Issoire, 75, Paris



**Appareils servant aux mesures**

**électriques—continué.**

, boul. Bourdon, 39, Paris.  
 Ph., rue des Petits-Champs, 47, Paris.  
 ., avenue de la République, 13, Paris.  
 uai de l'Horloge, 39.  
 , rue Sedaine, 28, Paris.  
 et Bianchi, rue Champollion, 15, Paris.  
 , A., Charleville, Ardennes.  
 st Cie., Allevard, Isère.  
 F., rue Montmartre, 118, Paris.  
 , Internationale des Téléphones, rue  
 ze-Apôtres, 24, Bruxelles.  
 ie, Ch., avenue Duquesne, 30, Paris.  
 E., rue Daguerre, 77, Paris.  
 Ad., rue des Fourneaux, 42, Paris.  
 J. E., boul. Saint-Michel, 123, Paris.  
 Vve. Ch., rue des Croisades, 4,  
 .  
 , rue du Bac, 134, Paris.  
 res, rue des Poitevins, 6 et 8, Paris.  
 . A., rue de l'Odéon, 21, Paris.  
 , rue Clapeyron, 25, Paris.  
 E. et Cie., rue Claude-Bernard, 75, Paris.  
 - Froment, rue Notre-Dame-des-  
 , 85, Paris.  
 ., successeur d'Andriveau, rue Cam-  
 -rnière, 5, Paris.  
 boul. de Vaugirard, 132, Paris.  
 A., rue St. André-des-Arts, 40, Paris.  
 ie de Paris, 19, Clichy.  
 lle. A., avenue d'Avroy, 70, bis.,  
  
 int, rue Neuve-Saint-Merry, 11, Paris.  
 m., rue Montmorency, 5, Paris.  
 J. et Cie., rue de Rocroy, 8, Paris.  
 signereux, successeur de Hardy, avenue  
 otte-Piquet, 6, Paris.  
 ). et Cie., quai des Gds. Augustins, 55,  
  
 r, Raoul, avenue de Neuilly, 122, Paris.  
 Bertrand, 26, Paris.  
 ., rue d'Hauteville, 30, Paris.  
 J., quai d'Asnières, 77, Villeneuve-  
 me.  
 T., avenue de Paris, 81, Saint Denis.  
 ., rue de la Tombe-Issoire, 79 et 81,  
  
 i, Lad., rue Montagne-Sainte-Gene-  
 5, Paris.  
 h., rue du Maine, 3, Paris.  
 enry fils, rue Lafayette, 6, Paris.  
 ch., rue Fontaine-au-Roi, 57, et rue  
 u, 29, Paris.  
 éon, rue d'Arcole, 21, Paris.  
 passage Bosquet, 19, Paris.  
 E., rue de Bourgogne, 65, Paris.  
 lo, rue Boursault, 44, Paris.  
 , Soc. fils et Cie., rue Sangier, 26, Paris.  
 boul. Richard Lenoir, 93, Paris.  
 B. V., rue Rempart de la Miséricorde,  
  
 ., rue Laromiguière, 9, Paris.  
 . Alf., rue Saint Denis, 163, Paris.  
 ay, rue Vaneau, 38, Paris.  
 ., cour des Petites-Ecuries, 8, Paris.  
 rue Charlot, 28, Paris.  
 al. Saint Germain, 130 et 132, Paris.  
 Th., rue de Marais, 27, Gand.  
 ., boul. de Courcelles, 17, Paris.  
 . Hector et Fils, rue Monsieur-le-  
 Paris.  
 t Cie., rue St.-Maur, 208, Paris.  
 ., rue Vivienne, 14, Paris.  
 e, E., rue Mandar, 10, Paris.

**Appareils pour la Galvanoplastie.**

**E.—**

**G.—**

Chutaux, T., place du Marché, 1, Levallois-Perret.  
 Courtot, rue Caumartin, 75, Paris.  
 Mora, C., boul. Richard Lenoir, 93 et 95, Paris.

**Argenteurs et Doreurs.**

**E.—Platers and Gilders.**

**G.—**

Akinow, rue Montmartre, 78, Paris.  
 Auzolle, rue St. Croix de la Bretonnerie, 42  
 Paris.  
 Beauferey, L., rue Charlot, 31, Paris.  
 Besançon, Ch., F. Ducroux suc., rue Chapon,  
 10, et passage des Gravilliers, 2, Paris.  
 Beziat, Henri, rue Paradis-Poissonnière, Paris.  
 Boulenger, Adolphe, rue du Vert-Bois, 5, Paris.  
 Brun, Ve. H., rue du Temple, 159, Paris.  
 Cailar, N., Bayard et Cie., rue Grange aux Belles,  
 37, Paris.  
 Champion, rue du Temple, 79, Paris.  
 Christoffe et Cie., rue de Bondy, 56, Paris.  
 Compagnie des Bronzes, rue d'Assant, 22,  
 Bruxelles, Belgique.  
 Dalifol, A., et Cie., quai Jemmapes, 172, Paris.  
 Delor François, rue de Seine, 41, Paris.  
 Demarquet frères, rue du Temple, 79, Paris.  
 Demilly, rue Grande, 15, Sèvres, Paris.  
 Desclercs (succ. de A. Gombault et Desclercs),  
 rue des Marais, 66, Paris.  
 Drault, boul. Richard Lenoir, 102, Paris.  
 Ducroux, rue Chapon, 4, Paris.  
 Dupont et Alker, Haeren, Bruxelles, Belgique.  
 Durand, Geor., J. Rocher succ., rue des Gravi-  
 liers, 75, Paris.  
 Folie et Denamur, quai Jemmapes, 82, Paris.  
 Fondu, J. B., Vilvorde, Belgique.  
 Frenais, A., boul. Richard Lenoir, 77, Paris.  
 Gaiffe, L. Ad., rue Saint André des Arts, 40,  
 Paris.  
 Gérard, anc maison Nicolle, rue Turbigo, 7, et  
 boul. Voltaire, 41, Paris.  
 Henry, Ve. Th., rue Folie Méricourt, 46, Paris.  
 Lacroix et Lamy, rue de Bondy, 36, Paris.  
 Lagriffoul, rue Charlot, 62, Paris.  
 Leclère, E., rue Bonaparte, 68, Paris.  
 Lejeune, A., rue du Temple, 83, Paris.  
 Lecherf, G., rue Haute, 88, Bruxelles, Belgique  
 Lemaire et Cie. (orfèvrerie Christoffe), boul. des  
 Italiens, 33, Paris.  
 Maire, J., place du Palais de Justice, 3, Bruxelles,  
 Belgique.  
 Mappin et Webb, de Londres et Scheffield (A  
 Deotto et Cie.), rue Vivienne, 34, Paris.  
 Ménage, J., rue Gamboy, 22, Paris.  
 Mignot, C., mais. Doisy, E. L. excellent succ., rue  
 de Saintonge, 47, Paris.  
 Moncomble, E., rue Vivienne, 9, Paris.  
 Mongenot, E., et Cie., rue Sedaine, 17, Paris.  
 Pernot et Semin, rue Réaumur, 7, Paris.  
 Renaudot et Maquiny, Fg. St. Denis, 87, Paris.  
 Saglier, V., rue d'Enghien, 12, Paris.  
 Société des couverts Alfénide, rue Hauteville, 4,  
 Paris.  
 Vandeveld, Fils, place du Grand Sablon, 12,  
 Bruxelles, Belgique.

**Articles en Ivoire, Bois pour Appareils  
Électriques.**

*E.—Ivory and Wooden Articles for Electrical  
Apparatus.*

*G.—*

Leblanc, J., rue Boutrie, 14, Paris.  
Loreau, rue de Turenne, 1, Paris.

**Ascenseurs Électriques (fab. et cons. de).**

*E.—Electric Lifts.*

*G.—*

Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
Siemens frères, rue Picot, 8, Paris.

**Avertisseurs d'incendie.**

*E.—Electric Fire Alarms.*

*G.—*

Asselin, C., rue des Arts, 11, Levallois, Paris.  
Barbier, P., avenue de la Grande-Armée, 51,  
Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Closset, E., passage des Postes, 4, Bruxelles,  
Belgique.  
Collin, rue Montmartre, 118, Paris.  
Dupré, G., rue Campagne Première, 5, Paris.  
Haumann, Devos D., rue du Nord, 61, Bruxelles,  
Belgique.  
Joly, A., rue du Cherche Midi, 19, Paris.  
Loppens, A., Gosselies, Hainaut, Belgique.  
Maiche, L. et Cie., rue Louis le Grand, 3, Paris.  
Mildé fils, Soc. Ch., rue Laugier, 26, Paris.  
Muller, E., rue d'Arenberg, 42, Bruxelles,  
Belgique.  
Petit, G., rue Blomet, 91, Paris.  
Ravaglia, Joseph Chevalier, Ravenne.

**Bains Électriques.**

*E.—Electric Baths.*

*G.—Electrische Bäder.*

Barda, Dr. Emile, rue Blanche, 49, Paris.  
Directeur de l'établissement spécial d'électro-  
balnéothérapie.  
Darin, Dr., boul. des Capucines, 41, Paris.  
De Bar, rue Nationale, 231, Lille.  
Gautier, Ve., rue Sévigné, 11, Paris.  
Gocel, Mme., boul. Sébastopol, 77, Paris.  
Potin fils, avenue St. Mandé, 80, Paris.

**Balances Électriques.**

*E.—Electric Scales*

*G.—*

Baillehache, E., De, rue Ampère, 54, Paris.  
Société Ind. et Com. Edison, à Ivry-sur-Seine,  
Paris.

**Bateaux Électriques.**

*E.—Electric Boats.*

*G.—*

Trouvé, G., rue Vivienne, 14, Paris.

**Bouées Télégraphiques en fer (co**

*E.—Telegraph Iron Buoys.*

*G.—*

India Rubber, Gutta Percha and Te  
Works Co., boul. Sébastopol, 97, Paris  
Siemens frères, rue Picot, 8, Paris.

**Boussoles.**

*E.—Compass Makers.*

*G.—Compass-Maker.*

Bisson, E., boul. Bourdon, 39, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Carpentier, rue Champollion, 15, Paris.  
Carpentier, rue Clapeyron, 25, Paris.  
Ducretet E. et Cie., rue Claude-Bernard, 75  
Dumoulin-Froment, r. N. D. des Chan  
Paris.  
Godfrin, faub. St. Martin, 52, Paris.  
Hayet et Lignereux, avenue de la Motte  
6, Paris.

**Boutons pour Contacts.**

*E.—Contact Buttons.*

*G.—*

Beez, Ch., rue Rochechouart, 45, Paris.  
Couthier, G., fils., rue de Sèze, 9, Paris.  
Crosse, rue des Vosges, 3, Paris.

**Brevets d'Invention.**

*E.—Patent Agencies.*

*G.—Patent-Bureau.*

Action Co-opérative, rue des Halles, 11, F  
Agence Anglaise et Française, Bon  
Chaussée-d'Antin, 8, Paris.  
Armengaud aîné, rue St. Sébastien 45, Pa  
Armengaud jeune, boul. de Strasbourg, 23  
Bachelu, Hotel de Ville, 49, Lyon.  
Blétry frères, boul. de Strasbourg, 2, Pari  
Bretton, L. C., rue Grenette, 24, Lyon.  
Brocard, rue Ferrandière, 44, Lyon.  
Bureau des Brevets d'Invention, avenue d  
66, Lyon.  
Cahen, Alb., boul. Saint Denis, 1, Paris.  
Casalonga, D. A., rue des Halles, 15, Pa  
Desnos, Ch., boul. Magenta, 11, Paris.  
Gonnard, F., cours Morand, 36, bis, Lyo  
Lépinette et Rabilloud, avenue de Saxe, 64

**Bronzes (fab. de) et Appareils**

**Lumière Électrique.**

*E.—Electroliers, Lamps & Lustres for Electri*  
*G.—*

Beetz, Ch., rue Rochechouart, 45, Paris.  
Gagneau et Cie., rue Lafayette, 45, Paris  
Ranvier, G., rue Turenne, 116, Paris.  
Susse frères, place de la Bourse, 31, Paris

**Cabines sourdes pour Transmis  
Téléphoniques.**

*E.—Sound proof cabins for Telephonic Trans*  
*G.—*

Voillereau, rue Chapon, 21 et 42, Paris.  
Walker, rue Rochechouart, 42, Paris.

**âbles et fils isolés (fab. de)**

*E.—Covered Wire and Cables.*

y et Oriol, Saint Chamond, Loire.  
 lr., rue de l'Abbaye, 16, Paris.  
 me., rue Montmartre, 18, Paris.  
 quai de l'Horloge, 39, Paris.  
 et Cie., rue Saint Denis, 182, Paris.  
 t Cie., rue Saint Ambroise, 25, Paris.  
 A., fabricants de fils télégraphiques,  
 a République, 30, Puteaux, Seine.  
 J. N., rue des Tournelles, 52, Paris.  
 bber, Gutta Percha & Telegraph Works  
 ul. Sébastopol, 97, Paris.  
 jeune, rue Belidor, 10, Paris.  
 re, J. J., et fils, rue de la Verrerie, 58,

ie Laugier, 42, Paris.  
 I., rue du Théâtre, 7, Paris.  
 , rue Saint Martin, 4, Paris.  
 J. O., rue de Communes, 10, Paris.  
 nonyme des Câbles Electriques, boul.  
 nann, 33, Paris.  
 nonyme des hauts fourneaux, fonderies,  
 s de Franche Comté, avenue Daumesnil,  
 118, Paris.  
 générale des téléphones (Usines Battier  
 l, rue Caumartin, 41, Paris.  
 arisienne de fonderie et de laminage,  
 Chemin-Vert, 11, Paris.  
 , F. A., Rugles, Eure.

**Cables Métalliques.**

o St. Denis, 269, Paris.

**âbles Sous-Marins (Fab de)**

*E.—Submarine Cables.*

ober, Gutta Percha & Telegraph Works  
 mited, Persan-Beaumont, Seine-et-Oise.  
 I., rue du Théâtre, 7, Grenelle, Paris.  
 nonyme des Câbles Electriques, boul.  
 an, 33, Paris.  
 générale des Téléphones (Usines Battier  
 , rue d'Aboukir, 4, Paris.

**isations Electriques ouvrante.**

Espret, rue Chaponnière, 3, Genève,

**chouc et Gutta-Percha Bruts  
(marchands).**

*rude India Rubber and Gutta Percha.*

*G.—Caoutchouc-Händler.*

I., rue Bichat, 29, Paris.  
 , J. B., place des Vosges, 15, Paris.  
 manche et Cie., rue d'Aboukir, 2, Paris.  
 Cie., rue de la Verrerie, 43, Paris.  
 ve.), quai Jemmapes, 108, Paris.  
 .., rue Vivienne, 40, succursale, boul.  
 pol, 129, Paris.

**Caoutchouc et Gutta-Percha Bruts  
(marchands)—continué.**

Hecht frères et Cie, rue du Château d'eau, 20,  
 Paris.  
 India Rubber, Gutta Percha, and Telegraph Works  
 Co., Limited, boul. Sébastopol, 97, Paris.  
 Ledoux et Bar, boul. Sébastopol, 46, Paris.  
 Lerchenthal, H., rue Montmorency, 16, Paris.  
 Mager, A., rue d'Aboukir, 11, Paris.  
 Menier, rue du Théâtre, 7, Grenelle, Paris.  
 Morellet (les fils d'Aug.), rue Sévigné, 27, Paris.  
 Norat, C., rue de Maubeuge, 39, Paris.  
 Oulmann, rue de l'Entrepôt, 30, Paris.  
 Rattier et Cie., rue d'Aboukir, 4, Paris.  
 Sarassin, E., rue du Château d'Eau, 27, Paris.  
 Savialle, P., fils, rue Lévis, 30, Paris.  
 Venot, A., et P. St. Germain, rue de la Barbette,  
 2, Paris.

**Caoutchouc Manufacturé.**

*E.—(Manufactured) India Rubber.*

*G.—*

Anderson, Abbott et Anderson, rue Martel, 8,  
 Paris.  
 Bandier, J., et Cie, rue du Jardin des Plantes, 44,  
 Marseille.  
 Bar, E., boul. Sébastopol, 46, Paris.  
 Barge, rue de la Paix, 15, Paris.  
 Baux, F., rue Charlot, 10, Paris.  
 Bergeruand, F., père et fils, rue des Archives, 16,  
 Paris.  
 Berlyn, A., boul. Sébastopol, 16, Paris.  
 Bernard, M., rue de Turbigo, 48, Paris.  
 Bernier (Vve. Félix) et Cie., rue Vivienne, 2, Paris.  
 Bideau, J. Q., rue Chapon, 5, Paris.  
 Bloc, L., rue des Petites Ecuries, 56, Paris.  
 Boileau, faub. St. Martin, 52, Paris.  
 Borriassou, C., Tiens, 3, ter., Lille.  
 Boucley, P., et Cie., rue Notre Dame de Nazareth,  
 12, Paris.  
 Brouhier et Cie., rue de la République, 29,  
 Marseille.  
 Brunessaux, J., rue Saint Denis, 89, Paris.  
 Calisch, O. A., cité Trévise, 12, Paris.  
 Caramello, M., passage Thévin, rue de Mercœur,  
 17, Paris.  
 Carron, A., rue Notre Dame, 215, Lille.  
 Cassassa, F., fils et Cie., rue Saint Martin, 257,  
 Paris.  
 Cassassa et Verstraet (Leteulier et Verstraet, succ.)  
 rue de Turbigo, 47, Paris.  
 Charlot et Cie., rue Saint Ambroise, 25, Paris.  
 Christy, F., rue de Béthune, 41, Lille.  
 Claude, H., faub. Poissonnière, 48, Paris.  
 Croye Magnau, A., et Cie., boul. National, 124,  
 Marseille.  
 Decourdemanche, A., et Cie., rue d'Aboukir, 2,  
 Paris.  
 Degeorges, rue de la Grande Truanderie, 45, Paris.  
 Degrave, E., rue de l'Oumnelet, 73, Roubaix.  
 Degrave, Emile, dépositaire à Paris, Boitel, rue  
 d'Enghien, 27, Paris.  
 Deiss, E., rue Volta, 15, Paris.  
 Denayrouze, L., rue Saint Pétersbourg, 30, Paris.  
 De Nevrozé, A., rue Intendance, Bordeaux.  
 Desremaux, L., Vieux Faubourg, 8, Lille.  
 Gottschulbe et Cie., faub. Saint Martin, 76, Paris.  
 Goulard, A., (T. Mercier succ.), boul. Magenta,  
 31, Paris.  
 Guillaume fils aîné, rue du Temple, 51, Paris.  
 Guibeil, A., dépôt à Paris, rue Vivienne, 40, Paris.  
 Guibal, C., rue Vivienne, 40, Paris.  
 Hutchinson, A., et Cie., rue Hauteville, 1, Paris.

**Caoutchouc Manufacturé—continué.**

Imbert, Jules, agence et dépôt de la Compagnie Américaine, J. L. Martiny et Cie., rue Haxo, 19, Marseille.  
 India Rubber, Gutta Percha, & Telegraph Works Co., boul. Sébastopol, 97, Paris.  
 Lacollonge, P., quai des Brotteaux, 28, Lyon.  
 Larcher, rue d'Aboukir, 7, Paris.  
 Lefebvre, H., boul. des Ecoles, 21, Lille.  
 Leronard, fils et Benjamin, rue de Trévisse, 49, Paris.  
 Lestrade, F. de, rue Chevalier Rose, 27, Marseille.  
 Le Tellier et Verstraet, rue Turbigo, 47, Paris.  
 Lévy, A., rue Hauteville, 34, Paris.  
 Lugult fils, rue Bouguière, 44, Bordeaux.  
 Magor, A., rue d'Aboukir, 11, Paris.  
 Magnin, J. et Cie., Quai de Serrin, 55, Lyon.  
 Martine, Mme., rue de Roubaix, 25, Lille.  
 Martiny, J. L., et Cie, rue des Petites Ecuries, 13, Paris.  
 Menier, rue du Théâtre, 7, Grenelles, Paris.  
 Petit, J., rue Saint Remi, 56, Bordeaux.  
 Rattier et Cie., rue d'Aboukir, 4, Paris.  
 Rouzaud, J. C., rue Colbert, Marseille.  
 Torilhon, Verdier et Cie, rue d'Enghien, 25, Paris.  
 Vives, rue Douves, 41, Bordeaux.  
 Wardavoir, Noël, rue Esquemoise, 61, Lille.  
 White, Child et Cie., boul. de la Liberté, 89, Lille.

**Charbons Électriques.**

*E.—Electric Carbons.*

*G.—Electrische Kolen.*

Ballat, rue Saint Fargeau, 5, Paris.  
 Blouzon, Edme, rue N. D. de Nazareth, 30, Paris.  
 Carré, E., rue de l'Estrapade, 19, Paris.  
 Carré, Ferd, rue de Reuilly, 48, Paris.  
 Goderel, E., avenue d'Eylau, 172, Paris.  
 Goodwin, Charles R., boul. des Capucines, 35, Paris.  
 Levy, E. (brevets F. Carré), avenue du Maine, 57, Paris.  
 L'Hôte, Armand, rue Marqfoy, 7, Paris.  
 Lizeray, A., rue du Bois, 18, Belleville, Paris.  
 Michaels, J. P., avenue de l'Opéra, 35, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Napoli, D., rue du faub. Poissonnière, 98, Paris.  
 Pierrard, O., rue Pelleport, 147, Paris.  
 Sautter, Lemonnier et Cie., avenue de Suffren, 26, Paris.

**Chapes et Pierres pour instruments de précision.**

*E.—Precious Stones for Pivots.*

*G.—*

Grosguenaint, rue Saint-Merri, 11, Paris.

**Claviers en Ivoire et Celluloïd.**

*E.—Ivory and Celluloid Finger Keys.*

*G.—*

Monti. Ch., rue Oberkampf, 127, Paris.

**Compteurs de Tours.**

*E.—Revolution Counters.*

*G.—*

Buss, W. A., rue Desaix, 1, Paris.  
 Deschiens, Eng., boul. St. Michel, 123, Paris.  
 Sainte, A., rue Taylor, 22, Paris.

**Contrôleurs Électriques de Bo**

*E.—Electrical Tell-tales for Watches.*  
*G.—*

Billaudot, L., rue Léonce, 5, Bellevue, Oise.  
 Boivin, A., rue de l'Abbaye, 16, Paris.  
 Collin, A. F., rue Montmartre, 118, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 2  
 Napoli, C., rue du faub. Poissonnière, 98

**Courroies de transmission**

*E.—Driving Bands.*

*G.—Maschinen.*

Beoquet, Cornille et Beuscart, rue Flax Lille  
 Berger, Place St. Michel, 2, Lyon.  
 Berguerand père et fils, rue des Arch Paris.  
 Bortholon, A., quai de la Guillotière, 9,  
 Bisma, H. Van, boul. de Strasbourg, 43,  
 Borissow, C., à Frens, 3, terr., Lille.  
 Boutry-Van, Isselsteyne, rue du Vieux-aux Montons, 8, Lille.  
 Chenon, rue St. Quentin, 22, Paris.  
 Christy, F., rue de Béthune, 41, Lille.  
 Constant, G., rue Nationale, 172, 8, Lil  
 Corcellet, Bernard et Cie., rue de la l  
 Lyon.  
 Couchet, H., Jallifier et Cie., rue de la Gr 24, Lyon.  
 Decourdemanche, A. et Cie, rue d'Abouki  
 D'Esping, Ch., Avenue Parmentier, 11, la Roquette, 118, bis, Paris.  
 Derrumeaux-Delemazure, rue de la F Lille.  
 Docho, rue St. Maur, 14, Paris.  
 Domango, Lemière et Cie., boulevard 74, Paris.  
 Dufour, jeune et fils, rue St. Pierre de l Paris.  
 Dunas, E. et Cie., rue de la République, Famezelle, Lavigueril, Amiens.  
 Faure, Cadet, rue François-Dauphin, 4  
 Félix-Hunebelle, Chaussée St. Pierre, 17  
 François, J., rue Nationale, 247, Lille.  
 Gallien et Charton, qua de la Charité, 2  
 Hartwig, Van Biema, boul. de Strasb Paris.  
 Imbert, Jules, rue Haxo, 19, Marseille.  
 India Rubber, Gutta Percha and l Works Co., boul. Sébastopol, 97, Par  
 Lacollonge, P., avenue de la Saxe, 218,  
 Lacollonge, P., quai des Brotteaux, 28,  
 Léger frères, Place des Hospices, 7, Ly  
 Liebermann, J., boulevard du Temple,  
 Lilvan, E. aîné, boul. de la Paix, 14, seille.  
 Magnin, J. et Cie., quai de Serrin, 55, l  
 Martine, J. B., rue Quenette, 5, Lille.  
 Martine, Mme., rue de Roubaix, 15, Lil  
 Martiny, J. L. et Cie., rue des Petites 13, Paris.  
 Masson, rue Popincourt, 52, Paris.  
 Menier, rue du Théâtre, 7, Paris.  
 Moseley, David et fils, cité Magenta, et Magenta, 33, bis, Paris  
 Neut. L. et L. Dumont, rue Notre-I Lille.  
 Nugues, Aimé, quai de la Charité, 12,  
 Paillart, Gme., (P. Boulland, successe St. Martin, 171, Paris, usine à Bolig  
 Placide-Pettereau le Jeune frère et fils, Renualt, Indre et Loire, et rue Be 28, Paris.



**s de transmission—continué.**

renue de Saxe, 66, Lyon.  
ai des Brotteaux, 27, Lyon.  
I. C. et Cie., rue Colbert, Marseille.  
oventry, rue Alibert, 10, Paris.  
ild et Cie., boul. de la Liberté, 89,

**idres en Verre (fabricants.)**

*E.—Glass Vases.*

*G.—*

runon, rue Péclet, 1 à 7, Paris.  
D. frères, rue des Guillemites, 3 à 7,

A., et Cie., rue Notre-Dame-de-Naza-  
, Paris.

Paradis-Poissonnière, 10, Paris.  
ue de Poitou, 41, Paris.

né, rue de Poitou, 25, Paris.

**s en Zinc et Diaphragmes pour Piles.**

*Zinc and Porous Pots for Batteries.*

—

Cie., rue du Faub. Poissonnière, Paris.  
L., et Cie., rue des Vieilles-Haud-  
l, Paris.

Mesdach et Cie., rue Saint Paul, 28,

Hip., Fondettes, près Tours, Indre-  
Entrepreneur breveté, fabriques  
de cylindres en zinc et appareils  
systèmes pour la télégraphie, four-  
les lignes télégraphiques du gouverne-  
de l'étranger et des lignes de Chemins

J. B. T. et fils, rue St. Maur, 146,

**tes pour Boîtes d'Instruments.**

*et Makers for Electrical Instrument Cases.*

—

., rue du Roi-de-Sicile, 26, Paris.

is, rue Amelot, 74, Paris.

sin, H., rue Saint Jacques, 71, Paris.

**te et Vulcanite (fab. et march.)**

*bonite and Vulcanite Manufacturers.*

*G.—*

Sh., rue de Turbigo, 13, Paris.

se, Dr. L., de la Société des Spécialités  
ues réunies, rue de Saint Pétersbourg,  
is.

I., et Cie., rue de l'École de Médecine,

ber, Gutta Percha & Telegraph Works  
ul. Sébastopol, 97, Paris.

., Représ. de la Cie. de Hanovre, rue  
tes-Ecuries, 11, Paris.

J. L., et Cie., boul. de Hainaut, 127,  
es, Belgique.

I. L., et Cie. de la Compagnie Franco-  
cine, rue des Petites-Écuries, 13, Paris.  
se du Théâtre, 7, Paris.

**Eclairage Electrique.**

*E.—Electric Lighting.*

*G.—Electrisches Licht.*

Agence Générale d'Électricité (Louis Liepmann,  
directeur), passage des Panoramas, Galerie des  
Variétés, Paris.

Baudet, Cloris, rue St. Victor, 90, Paris.

Beau et Bertrand Eaillet, rue St. Denis, 226,  
Paris.

Boez, Ch., rue Rochechouart, 45, Paris.

Clémançon, rue Lamartine, 23, Paris.

Compagnie Continentale Edison, avenue de  
l'Opéra, 33, Paris.

Compagnie Electrique, rue d'Argenteuil, 19,  
Paris.

Compagnie Française d'électricité, boul. Eugène,  
47, bis., Nouilly, Paris.

Compagnie Parisienne d'Éclairage Électrique,  
rue Dufesnoy, 25, Paris.

Delaporte, G., rue des Bourdonnais, 33, Paris.

Duboscq, J. et A., rue de l'Odéon, 21, Paris.

Ducommun, boul. Magenta, 18, Paris.

Duplay, E., avenue de la Motte-Piquet, Paris.

Edison, avenue de l'Opéra, 33, Paris.

Estève, A., à la Réole, Gironde.

Faure Electric Accumulator Co., avenue de l'  
Opéra, 5, Paris.

Fontaine, H., rue Drouot, 15, Paris.

French Electrical Power Storage Co., avenue de  
l'Opéra, 5, Paris.

Goodwin, Charles R., boul. des Capucines, 35,  
Paris.

Jarriant et Magne, rue Pierre-Charron, 25, Paris.

L'Éclairage Électrique Société Anonyme au  
capital de 6,550,000 francs, rue Lecourbe, 259,  
Paris.

Levent, J., boul. Magenta, 93, Paris. Installa-  
tions d'éclairage électrique de tous genres,  
éclairage à la nuit, pour fêtes soirées, travaux  
de nuit.

Mildé, Fils et Cie (Lx. Ch.) rue Laugier, 26,  
Paris.

Reynier, E., rue Benouville, 3, Paris.

Sautter, L., Lemonnier et Cie., avenue de Suffren,  
26, Paris.

Société Anonyme d'électricité, brevets, A.  
Gérard, passage Cottin, 8, Paris.

Société l'Éclairage Électrique, rue Lecourbe, 250,  
Paris.

Société de Const. Mécaniques et d'Appareils  
Électriques, rue St. Florentin, 11, Paris.

Société Industrielle et Commerciale Edison,  
avenue de l'Opéra, 33, Paris.

Société Lyonnaise de Constructions Mécaniques  
et d'Éclairage Électrique, rue de Grammont,  
19, Paris.

Solignac et Cie., rue St. Maur, 208, Paris.

Syndicat Français de la Lampe Soleil, avenue  
de Wagram, Paris.

Vallot fils, rue d'Arcole, 13, St. Etienne.

**Ecoles et Établissements des Sciences  
Électriques.**

*E—Electric and Scientific Schools.*

*G.—*

Association pour l'Étude d'Électricité, siège  
Social, boul. Haussmann, 37, Paris (D. Mon-  
nier, ingénieur directeur de laboratoirs, rue  
Piccini, avenue de Bois de Boulogne, Paris).

École de Physique et Chimie Industrielles, au  
Collège Rollin, Paris.

## Écoles et Établissements des Sciences Électriques—*continué.*

- École d'Horlogerie, faubourg du Temple, 99, Paris.  
École Pratique de Chimie et de Métallurgie, Fr. Weill, rue des Petites-Écuries, 13, Paris.  
École Supérieure de Télégraphie, au Ministère des Postes et Télégraphes, rue de Grenelle, 99, à 103, Paris.  
Laboratoire de Physique Directeur Desains, membre de l'Institut, à la Faculté des sciences, Paris.

## Electricité appliquée aux sciences, à l'industrie, à la médecine et aux arts.

*E.—Electrical Apparatus Manufacturers.*

*G.—Electrische Apparate—Fabr.*

- Achard, A. rue de Provence, 60, Paris.  
Alvergnist frères, rue de Sorbonne, 10, Paris.  
Andriveau, G., rue Campagne-Première, 5, Paris.  
Ateliers Ducommun, boul. Magenta, 18, Paris.  
Aubry, A. boul. St. Michel, 9, Paris.  
Barbe, E. boul. Voltaire, 156, Paris.  
Barbier et Fenestre, rue Curial, 82, Paris.  
Barbier, E. rue Fromentin, 9, Paris.  
Baron, J. rue Fondaudege, 85, Bordeaux.  
Baudet, Cloris, rue St. Victor, 90, Paris.  
Bonnet, G., boul. des Filles du Calvaire, 5, Paris.  
Borrell, A. P., rue des Petits Champs, 47, Paris.  
Borel-Martinaud, Avenue de Neuilly, 85, Paris.  
Biloret, A., et Mora, C., boul. Richard Lenoir, 93, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Breton frères, rue des Ecoles, 52, Paris.  
Brewer frères, rue St. André des Arts, 43, Paris.  
Buchin, A., rue Rolland, 11, Bordeaux.  
Carpentier, J., rue Champollion, 15; et rue Delambre, 20, Paris.  
Casanova, J., rue Marcadet, 98, Paris.  
Chaudron, L., boul. St. Germain, 229, Paris.  
Chertemps, A., passage St. Sébastien, 11, Paris.  
Chevallier, L. B. rue du Pressoir, 24, Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Com. Parisienne d'Éclairage par l'Electricité, rue Dufresnoy, 25, Paris.  
Courtot, C., rue Caumartin, 75, Paris.  
Dany et Lepage, rue du Faub. St. Martin, 59, et boul. de Strasbourg, 30, Paris.  
Defrançois, Q., place Dauphine, 24, Paris.  
Delaporte, rue des Bourdonnais, 33, Paris.  
Delenil, rue des Fourneaux, 42, Paris.  
Deschiens, C. E., boul. St. Michel, 123, Paris.  
Desrozières, rue de l'Échiquier, 42, Paris.  
Desruelles, L., avenue Percier, 8 bis, et rue la Boétie, 36, Paris.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Ducretet, E. et Cie., rue Claude-Bernard, 75, Paris.  
Edison, avenue de l'Opéra, 33, Paris.  
Félix, C., rue St. Lazare, 28, Paris.  
Fichet, A., rue des Martyrs, 19, Paris.  
Fontenilles, V., boul. Haussmann, 83, et Chaussée-d'Antin, 15, Paris.  
Fortein, J. H., rue de Varennes, 27, Paris.  
Gaiffret, Darlot, Hôtel de Ville, 13, Lyon.  
Gallais, A., boul. de la Villette, 73, Paris.  
Gérard, A., passage Cottin, 8, Paris.  
Goumier, rue Michel-le-Comte, 23.  
Grin, rue Hippolyte-Lebas, 6, Paris.  
Guérin, Ch. rue de Naples, 72, Paris.  
Guérin, E., rue Montmorency, 5, Paris.  
Guérot, rue Daguerre, 57, Paris.

## Electricité appliquée aux sciences l'industrie, à la médecine et aux *continué.*

- Guesdon-Leprince, rue Montorgueil, 67, Paris.  
Hardy, E., av. de la Motte-Piquet, 6, Paris.  
Hasle fils, rue Chanoinesse, 24, Paris.  
Hempel, O. et Cie., quai des Grands-Augustins, Paris.  
India Rubber, Gutta Percha and Telegraph Works Co., Limited, boul. Sébastopol, 97.  
Jarriant et Magne, rue Pierre-Charron, 25.  
Jarriant jeune, rue Belidor, 10, Paris.  
Journaux, J., rue de Cévannes, 56, Grenelle.  
Lapointe, G., rue St. Sébastien, 9, Paris.  
Laurent, rue de l'Odéon, 21, Paris.  
Lausberg, G., rue Pastourelle, 32 et 34, Paris.  
Le Brun, rue Pastourelle, 32 et 34, Paris.  
Leguay, E., rue de la Tombe-Issoire, 79.  
Lelièvre, A., rue des Coutures 6, St. Germain.  
Lepault, Henry, rue Lafayette, 6, Paris.  
Lesieur, rue des Deux-Portes, 6, Paris.  
Loiseau, A. fils, rue de Richelieu, 29, Paris.  
Loret, rue Mignon, 5, Paris.  
Luizard, L., rue d'Arcole, 21, Paris.  
Mathieu, rue Saintonge, 20, Paris.  
Méritens, A. de, rue Boursault, 44, Paris.  
Mignon et Rouard, boul. Voltaire, 137, Paris.  
Mildé, fils et Cie, rue Lanyier, 26, Paris.  
Minart, rue Neuve, 7, Amiens.  
Mors, L., rue St. Martin, 4 bis, Paris.  
Noé, rue Laromiquière, 9, Paris.  
Osselin, E., rue du Maine, 3, Asnières, S.  
Parent, J., rue Debelleyne, 19, Paris.  
Pulvermacher, J. L., rue St. Martin, 239.  
Rattier et Cie., rue d'Aboukir, 4, Paris.  
Radiguet et fils, boul. des Filles-du-Calvaire, Paris.  
Reynier, E., rue Benouville, 3, Paris.  
Royer, L., rue St. Martin, 225, Paris.  
Ruhmkorff rue Delambre, 20, Paris.  
Saisse, F., rue des Grands Augustins, 23.  
Sautter, Lemonnier et Cie., avenue de Suffren, Paris.  
Seguy et fils, rue de Monsieur-le-Prince, 53.  
Serrin, Vor., boul. St. Martin, 1, Paris.  
Siemens frères, rue Picot, 8, et rue de la Harpe, 179 et 181, Paris.  
Société anonyme des câbles électriques, Haussmann, 33, Paris.  
Soc. de l'Electrophone, L. Maiche et Cie, Louis-le-Grand, 3, Paris.  
Société des machines Magnéto-Électriques, rue Drouot, 15, Paris.  
Société indienne de l'électricité, rue Taithou, Paris.  
Société Lyonnaise de Constructions Mécaniques et de Lumière Électrique, rue de Grammont, 17 et 19, Paris.  
Société nouvelle de l'embrayage par l'électricité, rue de Provence, 60, Paris.  
Société universelle d'électricité Tommasi, rue de Provence, 11, Paris.  
Solignac et Cie., rue St. Maur, 208, Paris.  
Trouvé, G., rue Vivienne, 14, Paris.  
Vallot fils, rue d'Arcole, 13, St. Etienne.  
Vasseur-Mercier, A., rue de Rumigny, 49, A.  
Vian, G., rue de Châteaudun, 53, Paris.  
Vidie, Jules et fils, route de Flandre, Pantin, Seine.  
Vinay, E., rue Vancau, 38, Paris.  
Voisin, A., rue St. Fargeau, 41, Paris.  
Waffelaert, Désiré Josef, Brüssel, rue du Commerce, 70.  
Wandenberg, H., rue des Trois-Bornes, 23,

**Electricité Domestique.**

*E.—Electricians—Domestic.*

*G.—*

L. et Cie., rue, Louis-le-Grand, 3, Paris.

**Electrophone.**

*E.—Electrophones.*

*G.—*

le l'Electrophone, L. Maiche et Cie., rue  
le-Grand, 3, Paris.

**Fermetures Electriques.**

*—Electric Door and Window Fasteners.*

*—*

l, L., rue de Courcelles, 161, Paris.  
r, E., rue Montbaron, 116, Versailles.  
r, J. M. A., boul. de Strasbourg, 2, Paris.

**res (Fabricants et Marchands).**

*—Felt Manufacturers and Dealers.*

*—*

as, rue de Turenne, 39, Paris.  
et Rime, rue de la Banque, 14, Paris.

**Fils d'Acier.**

*E.—Steel Wire.*

*G.—Stahl-Draht.*

J., rue des Vinaigriers, 37 et 38, Paris.  
L., rue Amelot, 90, Paris.  
et Guillaume, rue des Bourdonnais, 30,

Fonderies et Acieries Nationales, rue de  
35, Paris.

on, W. D., rue de Marseille, 8, Paris.  
, J., Son et Cie., rue de Lancry, 17,

et Cie., rue de Provence, 56, Paris.  
W. et fils, rue de Bondy, 66, Paris.  
anon. des Acieries et Forges de Firminy,  
Voltaire, 36, Paris.  
Anon. des Forges de Châtillon et Com-  
y, rue Charras, 4, Paris.  
Anon. des Forges et Acieries de St.  
lyte, Faubourg Poissonnière, 8, Paris.

**Fils de Bronze.**

*E.—Bronze Wire.*

*G.—*

, P. et Cie., rue d'Argenteuil, 19, Paris.  
A. et Montefiore-Levi, Angoulême.

**Fils de Cuivre et Laiton.**

*E.—Copper and Brass Wire.*

*G.—*

l, J. M., rue des Tournelles, 56, Paris.  
dinger, E., faub. du Temple, 16, Paris.  
F., rue de Turenne, 14, Paris.  
ère et fils, rue de la Verrerie, 58, Paris.  
e et Cie., rue des Haudriettes, 1, Paris.  
, rue de Rambuteau, 20, Paris.  
l, L. O., rue de Commynes, 10, Paris.  
Anon. des forges de Châtillon et Com-  
y, rue Charras, 4, Paris.  
ris de Fonderie et de Laminage, rue du  
in-Vert, 14, Paris  
A., et Montefiore-Lévi Angoulême.

**Fils de Fer.**

*E.—Iron Wire.*

*G.—Eiserner-Draht.*

Aubert et Marqueset, rue des Vinaigriers, 43,  
Paris.  
Briancan, rue St. Denis, 205, Paris.  
Carpentier, A., et Cie., rue des Marais, 40, Paris.  
Cassart de Fernemont, Gembloux, Belgique.  
Corcelet, faub. St. Martin, 188, Paris.  
Crochet P. et Cie., rue de Montreuil, 48, Paris.  
Dallomagne, rue Grange aux Belles, 59, Paris.  
Dawans, A. et Orban, rue Grétry, Liège,  
Belgique.  
Denille fils, rue Albouy, 27, Paris.  
Dopfeld, rue des Tournelles, 52, Paris.  
Folten et Guillaume, rue des Bourdonnais, 30,  
Paris.  
Hitier, boul. Ménilmontant, 101, Paris.  
Jowa, J. rue Grétry, 149, Liège, Belgique.  
Lemoine, impasse Marcès, 11, rue Poppincourt,  
39, Paris.  
Petitjean et Belpêche, rue des Vinaigriers, 29,  
Paris.  
Rotterer et Bollot, rue Lourmel, 58, Grenelle,  
Paris.  
Rougier, rue Chapon, 25, Paris.  
Royston, J. Son & Co., rue de Lancry, 17, Paris.  
Société an. de Grivègne, Grivègne, Belgique.  
Société an. des forges et aciéries de St. Hippolyte,  
rue du Faubourg-Poissonnière, 8, Paris.  
Société an. des forges de Châtillon et Commen-  
try, rue Charras, 4, Paris.  
Société an. des Hauts-Fourneaux de Franche  
Comté, avenue Daumesnil, 166 et 168, Paris.  
Société Métallurgique de Gorey, rue des Fran-  
cois, 34, Paris.  
Société Métallurgique de Périgord, rue Taitbout,  
80, Paris.  
Sohier et Cie., rue de Lafayette, 121, Paris.  
Verschave, rue Pavée, Marais, 17, bis Paris.

**Fils en Nickel.**

*E—Nickel Wire.*

*G.—*

Gaspard et Belle, rue de Saintonge, 62, Paris.  
Soc. anon. le Nickel, rue de la Chaussée d'Antin,  
38, Paris.

**Fils de Platine.**

*E.—Platinum Wire.*

*G.—*

Gaiffo, L. A., rue Saint André des Arts, 40, Paris.  
Sorgue, P., passage Courbeau, 9, et Faubourg  
du Temple, 9, Paris. Fils de platine depuis  
3 100/m et audessus.

**Fils Électriques.**

*E.—Electric Wire.*

*G.—Electrischer Draht.*

Alamagny et Oriol, Saint Chamond, Loire.  
Barbier, E. F., rue Fromentin, 9, Paris.  
Beaufils, M. F., boul. Saint André, 4, Paris.  
Biloret et Mora, boul. Richard Lenoir, 93, Paris.  
Boileau père, rue de Sèvres, 11, Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Bonis, Mme., rue Montmartre, 18, Paris.  
Borrell, A. P., rue des Petits-Champs, 47, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Briancan, rue Saint Denis, 182, Paris.  
Callaud et fils, rue du Bocage, 26, Nantes.



**Fils Electriques—continué.**

Carue, Ph. J. B., rue St. Denis, 269, Paris.  
 Chappée, Le Mans, Sarthe.  
 Charlot et Cie., rue St. Ambroise, 25, Paris.  
 Chouvin et Marin Darbel, rue de Banquier, 25, Paris.  
 Collin, A., rue Montmartre, 118, Paris.  
 Deleuil, J. A., rue des Fourneaux, 42, Paris.  
 Dopfeld, J. N., rue des Tournelles, 52, Paris.  
 Douce et Cie., rue Rivoli, 116, Paris.  
 Fontenilles, V., boul. Haussmann, 38, Paris.  
 Frion et Thierré, rue du Roi du Sicile, 50, Paris.  
 Geoffroy, H., rue de l'Ermitage, 50, Paris.  
 Geschger, rue St. Paul, 28, Paris.  
 Hache et Pepin-Lehaleur, Vierzon, Cher.  
 Hardy, avenue la Motte Piquet, 6, Paris.  
 Hodel, J. H., rue Fondaudège, 57, Bordeaux.  
 Hulin, F., rue de Turenne, 14, Paris.  
 Hunebelle, rue de Solferino, 2, Paris.  
 India Rubber, Gutta Percha & Telegraph Works Company, Limited, boul. Sébastopol, 97, Paris.  
 Jarriant, rue Pierre Charron, 58, Paris.  
 Jarriant jeune, rue Belidor, 10, Paris.  
 Lagarde, rue de Sèvres, 15, Paris.  
 Laveissière, J. J. et fils, rue de la Verrerie, 58, Paris.  
 Legay, rue Langier, 42, Paris.  
 Létrange, L. et Cie., rue des Vieilles Haudriettes, Paris.  
 Levi, Montefiore, Chaussée de Mons, 415, Anderlecht.  
 Lichtenfelder, G., avenue de la Grande Armée, 45, Paris.  
 Mangenot, rue d'Ulm, 48, Paris.  
 Martel et Cie., rue Meyerbeer, 5, Paris.  
 Menier, rue du Théâtre, 7, Paris.  
 Mora, C., boul. Richard Lenoir, 93, Paris.  
 Mors L., rue Saint Martin, 4, Paris.  
 Mouchel et Cie., rue de Commynes, 10, Paris.  
 Papin, boul. Montparnasse, 51, Paris.  
 Parod, E. U., Plessis Trévisse, par Villiers-sur-Marne.  
 Perin-Grados, boul. Richard Lenoir, 106, Paris.  
 Preisch, P., boul. Richard Lenoir, 82, Paris.  
 Rattier et Cie., rue d'Aboukir, 4, Paris.  
 Schneider et Cie., rue de Provence, 56, Paris.  
 Société Anon. des Forges de Châtillon Commentry, rue Charratet, 4, Paris.  
 Société Anonyme des Câbles Electriques, boul. Haussmann, 33, Paris.  
 Société Anonyme des hauts Fourneaux, Fonderies, et Forges de Franche Comté, avenue Daumesnil, 116 et 118, Paris.  
 Société Anonyme Le Nickel, rue de la Chaussée d'Antin, 38, Paris.  
 Société Parisienne de Fonderie et Laminage, rue du Chemin Vert, 11, Paris.  
 Taille, de la, Orléans.  
 Taverdon, A. L., rue de l'Arbalète, 36, Paris.  
 Vallot fils, rue d'Arcole, 13, St. Etienne.  
 Weiler et Lévi-Montefiore, Angoulême, Charente.

**Fils Isolés (fab. de).**

E.—Covered Wire—Gutta Percha.  
 G.—

TAYLOR, GEORGE CROSLAND, Dee Side Electric Works, Neston, Cheshire, England.  
 Voir index des annonces Britanniques.

**Freins Electriques.**

E.—Electric Brakes.  
 G.—

Société Nouvelle de l'Embrayage par l'Electricité, rue Lafayette, 189, Paris.

**Galvanoplastie.**

E.—Electrotypers.

G.—Galvanoplastie.

Allain frères, rue du Temple, 175, Paris.  
 Bertrand, A., rue des Archives, 3, Paris.  
 Beaufours, rue Saint-Denis, 255, Paris.  
 Blenner, H., rue Feydeau, 3, Paris.  
 Bloch et Rosenwald, rue Pastourelle, 24, Paris.  
 Blot, rue Bleue, 7, Paris.  
 Boist, rue Ste-Anne, 49, Paris.  
 Boudreaux, L., fils, rue Hautefeuille, 8, Paris.  
 Boudreaux fils, rue Monsieur-le Prince, 27, Paris.  
 Boulenger, A., rue Vertbois, 4, Paris.  
 Brémont, rue de Gravilliers, 24, Paris.  
 Cailar, N., Bayard et Cie., rue Grange Belles, 37, Paris.  
 Calibre, rue Réaumur, 46, Paris.  
 Casalunga, D. A., rue des Halles, 15, Paris.  
 Caux, E., rue Debelleyne, 3, Paris.  
 Cellière, L., rue de Bondy, 56, Paris.  
 Christoffe et Cie., rue de Bondy, 56, Paris.  
 Cie. parisienne d'éclairage par l'électricité, Dufresnoy, 25, Paris.  
 Croizon, passage de la Reuss, 5, Paris.  
 Delaunay, rue St. Gilles, 12, Paris.  
 Feuquière, J., rue de Sèvres, 89, Paris.  
 Foulie, rue St. Maur, 204, Paris.  
 Fouielot, rue St. Sauveur, 11, Paris.  
 Gaiffe, A., rue St. André-des-Arts, 40, Paris.  
 Gautret, Pierre, avenue du Maine, 175, Paris.  
 Hadin, R., rue St. Claude, 5, Marais, Paris.  
 Hugodé, boul. Bonne-Nouvelle, 40, Paris.  
 Jacquard, rue Mazarine, 48, Paris.  
 Lionnet, rue Debelleyne, 5, Paris.  
 Le Maire et Cie., boul. des Italiens, 33, Paris.  
 Marin, rue Monsieur-le-Prince, 51, Paris.  
 Massonnet, Ch. et Cie., rue du Faubourg Denis, 54, Paris.  
 Michel, V., rue Duguay-Trouin, 3, Paris.  
 Oudry, L., Usines, avenue de Versailles, Paris.  
 Pailloux, boul. du Temple, 36 et 42, Paris.  
 Pallet, rue Lacharrière, 21, Paris.  
 Pape, rue d'Angoulême du Temple, 72, Paris.  
 Rousset, J., rue Visconti, 13, Paris.  
 Savary et Sénac, rue Suger, 22, Paris.  
 Stœsser, A., boul. St. Germain, 122, Paris.  
 Wagner, rue des Petits-Champs, 47, Paris.  
 Weil, F., rue des Petites-Ecuries, 13, Paris.

**Globes et Lanternes (fab.)**

E.—

G.—

Avoiron et Clément, boul. Voltaire, 56, Paris.  
 Spécialités de cristaux et globes pour l'électricité.  
 Clert, G., rue Drouot, 25, Paris.  
 Defert, rue du Château d'Eau, 40, Paris.  
 Leune, rue des Deux Ponts, 29 et 31, Paris.  
 Lissante et Cosson, rue Martel, 12, Paris.  
 Maës frères, cour des Petites Ecuries, Paris.  
 Meyer et Cie., rue de Vaugimard, 255, Paris.  
 Minotte et Cie., boul. Sébastopol, 135, Paris.  
 Monnier, H., rue de la Folie Méricourt, 104, Paris.  
 Monnot, rue Martel, 8, Paris.  
 Paris et Cie., rue Paradis-Poissonnière, 47, Paris.  
 Verreries et Cristalleries de la Seine, rue Sabin, 42, Paris.  
 Vidie, route de Flandres, 48, Paris.



**isseurs (fabricants).**

*-Lubricating Apparatus.*

L., rue Bouret, 7, Paris.  
Cie., boul. Magenta, 124, Paris.  
uai de Jemmapes, 200 et 202, Paris.

**erie Électrique (constr.)**

*E.—Electrical Clocks.*

*7.—Electrische Uhren.*

ie de Rovigo, 39, Alger.  
go, 1, Alger.  
., rue Fromentin, 9, Paris.  
-en-Provence.  
avenue d'Orléans, 29, Paris.  
de l'Horloge, 39, Paris.  
F., rue des Haudriettes, 6, Paris.  
saint Maur, 189, Paris.  
Montmartre, 118, Paris.  
ouillet, rue de Marchienne, 8,  
vêque, Belgique.  
E., boul. Saint Michel, 123, Paris.  
des Croisades, 32, Bruxelles, Bel-

de Saintonge, 21, Paris.  
ie Taitbout, 6, Paris.  
it Eugénie, 22, Paris.  
., pl. Saint Lambert, 5, Liège,

ie des Batignolles, 80, Paris.  
venue d'Avroy, 70, bis, Paris.  
, rue de la Bourde, 13, Tours, et  
re-et-Loire.  
rue Blanche, 7, Paris.  
Cie., rue de la Montagne-Sainte-  
5, Paris.  
., rue de Saintonge, 20, Paris.  
ib. Poissonnière, 98, Paris.  
urs d'Alsace-Lorraine, 114, Bor-

as, rue Oudinot, 23, Paris.  
cours des Petites-Ecuries, 8, Paris.  
nélius, rue Le-Peletier, 23, Paris.  
Porte-Saint-Georges, 31, Anvers,

hé aux œufs, 12, Bruges, Belgique.  
des Petits-Champs, 47, Paris.

**Électriques de niveau d'eau.**

*rical Water Level Indicators.*

de Tivoli, 5, Paris.

**inieurs Électriciens.**

*—Electrical Engineers.*

rue Lafayette, 189, Paris.  
., Baron d', boul. Malesherbes,

dovic Charles Adrian Joseph, Cte.  
venue Montespau, 6, Passy, Paris.  
ie d'Enghien, 37, Paris.  
de Naples, 4, Paris.  
de, rue Ampère, 54, Paris.  
des Poissonniers, 58, Paris.  
estre, rue Curial, 82, Paris.  
st François, rue Fromentin, 9,

**Ingénieurs Électriciens—continué.**

Bardon, L., boul. National, 63, Clichy, Paris.  
Baron, J., rue Fondaudège, 85, Bordeaux.  
Beaufils, Contrôleur des Télégraphes, Paris.  
Bergon, O., rue de Madame, 56, Paris.  
Berjot, A., rue Gay-Lussac, 48, Paris.  
Bernard, Julien, rue de l'Echiquier, 8, Paris.  
Berthon, L. A., boul. de Strasbourg, 56, Paris.  
Bizot, J., Aix-en-Provence.  
Blondot, Aug., rue du Monthabor, 38, Paris.  
Boistel, Georges, rue Picot, 8, Paris.  
Bonfante et Maisonneure, rue Grenet, 3, Nantes,  
Borrel Louis, rue Carnot, 6, Paris.  
Borrell, A. P., rue des Petits-champs, 47, Paris.  
Bouchaert et Cie., rue Verte, Bruxelles.  
Bourseul, Charles, Cahors.  
Braamm, John de, rue des Mathurins, 3, Paris.  
Brochard, Félix, rue Condorcet, 48, Paris.  
Buchin, A., rue Rolland, 11, Bordeaux.  
Cabanellas, Gust., rue Bernouilli, 11, Paris.  
Cacheux, Alexis Firmin, Tribunal de Commerce,  
Paris.  
Carême, Félix et Houzeau Louis, rue de Grenelle,  
103, Paris.  
Carré, F., rue de Reuilly, 48, Paris.  
Casalonga, D. A., rue des Halles, 15, Paris.  
Chambrier, A., Charleville, Ardennes.  
Chameroy, Hipp. Maisons-Lafitte, Seine-et-Oise.  
Champoullion, A., avenue Gourgaud, 81, Paris.  
Chandeu, rue Brochant, 12, Paris.  
Changy, C. de, rue des Arts, 29, Levallois-  
Perret, Paris.  
Charrière, et Cie., Allevard, Isère  
Chassan, Paris.  
Chenot aîné, rue David, 10, Paris.  
Cherrill, Nelson, rue Daumesnil, 32, Paris.  
Chertemps, Alex., pass. St. Sébastien, 11, Paris.  
Chrétien, J., rue de Monceau, 87, Paris.  
Clerc, L., avenue Wagram, 42, Paris.  
Closset, Emil, boul. du Hainault, 157, Bruxelles.  
Cormillot, rue Vandal, 10, Paris  
Courtenay, L. W., rue Cambon, 45, Paris.  
Davillé, Luçon, Vendée  
De Bar, rue Nationale, 231, Lille.  
Delahaye, G., rue Drouot, 15, Paris.  
Delaporte, G., rue des Bourdonnais, 33, Paris.  
Delattre, A., rue Saint Georges, 20, Paris.  
Deprez, Marcelo, avenue de Wagram, 42, Paris.  
D'Hamelincourt, rue Saussure, 71 et 73, Paris.  
Digeon, J., rue de Lanery, 56, Paris.  
Ducousso Frères, rue Vanneau, 82, Paris.  
Dupont, boul. de la Seine, Bruxelles.  
Estienne, Edouard, rue Nollet, 17, Paris.  
Félix, C., rue St. Lazare, 28, Sermaize, Paris.  
Fernique, rue de Fleurus, 31, Paris.  
Fichet, P. A., rue des Martyrs, 19, Paris.  
Frayssinier, boul. Sébastopol, 97, Paris.  
Gadot, Paul, rue de Montreuil, 82, Paris.  
Gaiffe, L. D., rue St. André des Arts, 40, Paris.  
Gaillet et Huet. place Richell, 7, Lille.  
Gerald, F., Paris.  
Gérard A., Passage Cottin, 8, Paris.  
Geyter, G. de, Mouscron, Belgique.  
Gottendorf, Sylv., rue de Clichy, 39, Paris.  
Gramme, Zen, rue Oberkampf, 63, Paris.  
Gras, Jules, avenue de Lowendall, 5, Paris.  
Gray, Ch. Ham, Persan Beaumont, Paris.  
Grenet, rue de Chaillot, 5, Paris.  
Hardy, E., avenue de la Motte-Piquet, 6, Paris.  
Hedeman, G. de, avenue de Villiers, 97, Paris.  
Herz, Cornélius, rue du Faubourg Montmartre,  
10, Paris.  
Hospitalier, E., rue de Bellay, 6, Paris.  
Hurault, Louis, rue Cler, 29, Paris.  
Ivernois, G. d', rue d'Anjou St. Honoré, 4,  
Paris.

**Ingénieurs Electriciens—continué.**

Jablokoff, rue de Naples, 52, Paris.  
 Jacquez, Ernest, rue Bertrand, 26, Paris.  
 Jarriant, Bas., rue Pierre-Chartron, 25, Paris.  
 Jaspas, rue Jonfosse Liège, Belgique.  
 Jordery, C., rue Montagne, 26, Paris.  
 Jousset, P., Paris.  
 Kabath, N. de, rue Fortuny, 15, Paris.  
 Lacombe, G., rue Bourgogne, 41, Lille.  
 Laing, W., boul. d'Enfer, 217, Paris.  
 Lasselmanns, Ant., rue des Rosiers, 42, Paris.  
 Lemonnier, P., avenue de Suffren, 26, Paris.  
 Lepaute, Henry, rue Lafayette, 6, Paris.  
 Libin, François, rue des Champs, 86, Gand, Belgique.  
 Liepmann, Henri, rue Monthyon, 11, Paris.  
 Liepmann, Henri (Société French Electrical Power), avenue de l'Opéra, Paris.  
 Lipman, C., Paris.  
 Loiseau, rue Fontaine-au-Roi, 57, Paris.  
 Lontin, P., Paris.  
 Maiche, L. et Cie., Louis le Grand, 3, Paris.  
 Malardot, Eugène, rue Bertrand, 24, Paris.  
 Marcellac, Paul, rue Joubert, 5, Paris.  
 Menier, Henri, rue d'Enghien, 6, Paris.  
 Mercadier, E., rue Descartes, 21, Paris.  
 Méritens, de, rue Boursault, 44, Paris.  
 Meyer, B., boul. St. Denis, 1, Paris.  
 Mildé, Ch., rue Laugier, 26, Paris.  
 Minart, rue Neuve, 7, Amiens.  
 Moncel, Cte. Th. du, rue de Hambourg, 7, Paris.  
 Monnier, D., rue Pigalle, 57, Paris.  
 Mors, L., rue Saint Martin, 4, Paris.  
 Moser, James, rue Lord-Byron, 16, Paris.  
 Parent, G., rue de Bellevue, 19, Paris.  
 Planté, Gaston, rue des Tournelles, 56, Paris.  
 Postel-Vinay, rue Vanneau, 38, Paris.  
 Puyat, de M. A., Messrs. Jaspas & Co., Liège.  
 Rau, boul. Bischoffsheim, Bruxelles.  
 Raveau, Paul, boul. des Batignolles, 11, Paris.  
 Raymon, L., rue de Maubeuge, 23, Paris.  
 Reynier, Em., rue Benouville, 3, Paris.  
 Richez, et Cie., rue du Pont Neuf, Bruxelles.  
 Roosevelt, Cornélius, rue de Peletier, 23, Paris.  
 Sarcia, Jules, rue de Tocqueville, 9, Paris.  
 Scrivanon, Grég., rue Vignon, 32, Paris.  
 Seligmann-Lui, rue Denfert-Rochereau, 23, Paris.  
 Serrin, Victor, boul. St. Martin, 1, Paris.  
 Siemens, W., rue Picot, 8, Paris.  
 Solignac, rue St. Maur, 208, Paris.  
 Tessier, Jules, rue du Théâtre, 7, Paris.  
 Tissandier, G., avenue de l'Opéra, 19, Paris.  
 Trouvé, Gust., rue Vivienne, 14, Paris.  
 Vallot fils, rue d'Arcole, 13, St. Etienne.  
 Vallejos, H., Lieut.-Colonel, rue du Faubourg Saint Honoré, 1, Paris.  
 Van Halle, rue Chaussée d'Anvers, Bruxelles.  
 Voghels, C., rue des Pierres, 87, Bruges.  
 Walcker, rue Rochechouart, 42, Paris.

**Ingénieurs Téléphoniques.**

*E.—Telephone Engineers.*

*G.—*

Maiche, L., et Cie., rue Louis-le-Grand 3, Paris.  
*Voir index des annonces.*

**Instruments de Musique Electriques.**

*E.—Electrical Music Instruments.*

*G.—*

Baudet, Cyrille, rue Favart, 20, Paris.  
 Girard, Fr., rue des Batignolles, 80, Paris.  
 Kastner, F. et V., rue de Clichy, 43, Paris.

**Instruments de Précision.**

*E.—Scientific Measuring Instruments.*

*G.—Wissenschaftliche Mess-Instrumente.*

Andriveau, G., rue Campagne Première, 5, Paris.  
 Armengaud aîné, rue Saint-Sébastien, 45, Paris.  
 Bisson, E. boul. Bourdon, 39, Paris.  
 Borrel, A. P., rue des Petits-Champs, Paris.  
 Bourdine, avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, AL, rue Sedaine, 28, Paris.  
 Carpentier et Bianchi, rue Champollion, Paris.  
 Casse, A., rue Thorigny, 18 et 20, Paris.  
 Chambrier, A., Charleville, Ardennes.  
 Charles, rue des Rosiers, 42, Paris.  
 Charrière et Cie., Allevard, Isère.  
 Collin, A., rue Montmartre, 118, Paris.  
 Croissant, place Denfert-Rochereau, 12, Paris.  
 Dalifol et Cie., quai Jemmapes, 172, Paris.  
 De la Roche, Ch., avenue Duquesne, 30, Paris.  
 Deleuil, J. A., rue des Fournoux, 42, Paris.  
 Deschiens, C. E., boul. Saint Michel, 123, Paris.  
 Dienst, J., rue du Bac, 134, Paris.  
 Duboscq, J. et A., rue de l'Odéon, 21, Paris.  
 Duchemin, rue Claperton, 25, Paris.  
 Ducretet E. et Cie., rue Claude-Bernard, Paris.  
 Dumoulin-Froment, rue Notre-Dame des Champs, 75, Paris.  
 Dupré, G., rue Campagne-Première, 5, Paris.  
 Estienne, boul. de Vaugirard, 132, Paris.  
 Gaiffe, L. A., rue Saint-André-des-Arts, 40, Paris.  
 Giraud, rue de Paris, 19, Clichy.  
 Grosgrénain, rue Neuve Saint Merry, Paris.  
 Guérin, Em., rue Montmorency, 5, Paris.  
 Guichard, J., et Cie., rue de Hocroy, 8, Paris.  
 Hayet et Lignereux, avenue de la Motte Piquet, Paris.  
 Hempel et Cie., quai des Grand Augustins, Paris.  
 Hurlimann, passage Dauphine, Paris.  
 Jacquemin, Raoul, av. de Neuilly, 122, Paris.  
 Jamain, L., rue Hauteville, 30, Paris.  
 Jenkins, C., rue du Chemin-Vert, 41, Paris.  
 Lattuada, quai d'Asnières, 77, Villeneuve Garenne.  
 Leguay, E., rue de la Tombe Issoire, 79, Paris.  
 Lenczewski, L. et Cie., rue de la Montagne Sainte-Geneviève, 25, Paris.  
 Lepaute, Henry, fils., rue Lafayette, 6, Paris.  
 Le Roy, Ch., rue du Maine, 3, Paris.  
 Loiseau, Ach., rue Fontaine-au-Roi, 57, Paris.  
 Luizard, Léon, rue d'Arcole, 21, Paris.  
 Méritens, A. de, rue Boursault, 44, Paris.  
 Mildé Ch. fils et Cie., rue Laugier, 26, Paris.  
 Mora, C., boul. Richard-Lenoir, 39, Paris.  
 Nodot, J. B. V., rue Rempart de la Miséricorde, 5, Dyon.  
 Noël, C. P., rue Laromière, 9, Paris.  
 Noël, V. A., rue St. Denis, 163, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Renaut et Cie., avenue Parmentier, 122, Paris.  
 Royer, boul. St. Germain, 130 et 132, Paris.  
 Ruhmkorff, rue Champollion, 15, Paris.  
 Sébert, F., boul. de Courcelles, 17, Paris.  
 Séguy, V., Hector et fils, rue Monsieur-le-Prince, 53, Paris.  
 Sire, rue St. Marguerite-St.-Antoine, 33, Paris.  
 Trouvé, Gust., rue Vivienne, 14, Paris.  
 Verdavain, E., rue Mandar, 10, Paris.  
 Verdin, Ch., rue Git-le-Cœur, 11, Paris.

**ments pour la Physique et la  
Chimie.**

*E.—Scientific Instruments.*

*—Wissenschaftliche Instrumente.*

boul. du Temple, 33 et 35, Paris.  
1, société anonyme de l', boul.  
ière, 21, Paris.  
, G., rue Campagne-Première, 5, Paris.  
1 générale des ouvriers en instruments  
e, rue Pierre-Levée, 9, Paris.  
iné, boul. Montparnasse, 81, Paris.  
upresseoir, rue St. Honoré, 175, Paris.  
Fenestre, rue Curial, 82, Paris.  
y, rue Dauphine, 16, Paris.  
s, quai de l'Horloge, 29, Paris.  
., et Cie., rue Notre-Dame-de-Naza-  
, Paris.  
t Billaudot, rue de la Sorbonne, 22,  
  
res, rue St. André-des-Arts, 43, Paris.  
rue de Reuilly, 48, Paris.  
rue Vieille-du-Temple, 83, Paris.  
rue d'Aboukir, 48, Paris.  
le docteur Arthur, galerie de Valois,  
ris.  
, boul. d'Enfer, 226, Paris.  
, L. de, rue de Bondy, 92, Paris.  
epage, rue du Faub. St. Martin, 59, et  
Strasbourg, 30, Paris.  
e, H., rue Gay-Lussac, 5, Paris.  
F., rue St. Séverin, 34, Paris.  
l, Q., place Dauphine, 24, Paris.  
G., rue des Bourdonnais, 33, Paris.  
A., rue des Fourneaux, 42, Paris.  
rue de l'Ancienne-Comédie, 19 et 21,  
  
, rue des Petits-Hôtels, 20, Paris.  
ul. St. Germain, 94, Paris.  
ébrun, 30, Paris.  
A., rue Monsieur le-Prince, 18, Paris.  
et Bondier-Moret, rue des Franca-  
is, 41, Paris.  
, boul. d'Enfer, 232, Paris.  
, Simon, rue Turbigo, 87, Paris.  
rue des Grandes-degrès, Paris.  
A., rue de Bellechasse, 6, Paris.  
rt, boul. du Temple, 17, Paris.  
t Cie., rue de Rocroy, 8, Paris.  
lfréd, rue des Francs-Bourgeois, 47,  
  
humann, rue Lancry, 39, Paris.  
., rue de l'Odéon, 21, Paris.  
., rue Boutebrie, 14, Paris.  
l., rue Coutures-St.-Gervais, 6, Paris.  
i et Cie., rue de la Montagne-Sainte-  
re, 25, Paris.  
. St. Germain, 82, Paris.  
ie des Archives, 22, Paris.  
ie du Château-d'Eau, 44, Paris.  
rue Laromicière, 64, Paris.  
, rue Debelleyne, 19, Paris.  
Mayet, 20, Paris.  
ue des Quatre-Fils, 5, Paris.  
t fils, boul. des Filles-du-Calvaire, 15,  
  
l., rue Benouville, 3, Paris.  
emonnier et Cie., avenue de Suffren,  
s.  
place du Pont-Neuf, 13, Paris.  
, boul. St. Martin, 1, Paris.  
e., rue Esquermoise, 13, Lille.  
rue Vanneau, 38, Paris.  
l., rue des Pierres, 87, Bruges.  
rue Gay-Lussac, 64, Paris.

**Inventeurs—Électriques.**

*E.—Inventors—Electrical.*

*G.—Bureau zur Ausnützung von Erfindungen.*

Maiche, L., et Cie., 3, rue Louis le Grand, Paris.  
*Voir index des annonces.*

**Isolateurs et Fournitures de Télé-  
graphie et Téléphones.**

*E.—Insulators and Telegraph Materials.*

*G.—Isolatoren-Fabrikanten.*

Bréguet, quai de l'Horloge, 39, Paris.  
De Fuisseaux, frères, Baudour, près Monte,  
Belgique.  
Frion et Thierré, rue du Roi-de-Sicile, 50, Paris.  
Hache et Pepin-Lehalleur, Vierzon, Cher.  
India Rubber, Gutta Percha & Telegraph Works  
Company, Limited, boul. Sébastopol, 97, Paris.  
Legras, Th., avenue de Paris, 81, Saint Denis,  
près Paris.  
Pavoux et Cie., rue Delaunoy, 14 et 16, Bruxelles.  
Picard, A., rue du Marais, 62, Paris.  
Postal-Vinay, A., rue Vanneau, 38, Paris.  
Preisch, boul. Richard Lenoir, 82, Paris.  
Vauzelle, J. B. F., et fils, rue St. Maur, 146,  
Paris.

**Ivoire Brut (marchands).**

*E.—Crude Ivory.*

*G.—*

Héroid, R., rue du Château d'Eau, 8, Paris.  
Lerchenthal, Pl., rue de Montmorency, 16, Paris.  
Ries, B. M., rue Braque, 4, Paris.

**Jouets Électriques.**

*E.—Electrical Toys.*

*G.—Electrische Spielzeug.*

Beeg, Ch., rue Rochechouart, 45, Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Gast, Alf. Montenat, faub. du Temple, 51, Paris.  
Gorde, A., rue Pigalle, 24, Paris.  
Houlman frères, boul. du Temple, 45, Paris.  
Levasseur et Ouachée, rue de Rivoli, 154, Paris.  
Parent, Geo., rue Debelleyne, 19, Paris.

**Laminoirs.**

*E.—Rolling Mills and Rolled Metal Manufacturers.*

*G.—Waltzwerke.*

Arthaud et La Selve, quai de l'Hôpital, 11, Lyon.  
Bachot, Grouard et Cie., rue Morand, 2 et 4,  
Paris.  
Booth, J., & Co., Sheepcote-street, Birmingham,  
England, Telephone No. 311. *Voir index des  
annonces Britanniques.*  
Decaux et fils, rue Turbigo, 42, Paris.  
Dronier, P., et Cie., rue des Fêtes, 63, Belleville,  
Paris.  
Griset et Schmidt, rue Oberkampf, 123, Paris.  
Guillon, quai de Jemmapes, 38, Paris.  
Lambert, S., rue Volta, 33, Paris.  
Masson, F., rue de Châlon, 38, Paris.  
Oeschger, Mesdach et Cie., rue St. Paul, 28, Paris.  
Pirot, A., rue de Montmorency, 14, Paris.  
Schmidt, rue Popincourt, 39, Paris.  
Société Parisienne de Fonderie et Laminage, rue  
du Chemin Vert, 11, Paris.



### Lampes Électriques et Régulateurs (constr. de.)

*E.—Electric Lamps and Regulators.*

*G.—Elektrische Lampen.*

Albaret, A. O., passage du Désir, 2 et 4, Paris.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Avoiron et Clement, boul. Voltaire, 56, Paris.  
 Baillehache, E. de, rue Ampère, 54, Paris.  
 Baudet, Cloris, rue Saint Victor, 90, Paris.  
 Bourdin, C., av. de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, Alexis, rue Sedaine, 28, Paris.  
 Carré, Ferd., rue de Reuilly, 48, Paris.  
 Changy, Ch. de., rue des Arts, 29, Levallois  
 Perret, Paris.  
 Chertemps, A. D., passage St. Sébastien, 11,  
 Paris.  
 Clerc, L., av. Wagram, 42, Paris.  
 Compagnie Belge et Hollandaise d'électricité, rue  
 Royale, 80, Bruxelles.  
 Compagnie Continentale Edison, av. de l'Opéra,  
 33, Paris.  
 Compagnie électrique, rue d'Argenteuil, 19, Paris.  
 Compagnie Française d'électricité (lampe Mondos),  
 boul. Eugène, 47, Neuilly.  
 Compagnie gén. Belge de lumière électrique,  
 rue de France, 18, Bruxelles.  
 Compagnie Parisienne d'éclairage par l'électricité,  
 rue Dufresnoy, 25, Paris.  
 De la Roche, Charles Ferdinand, rue Gaston de  
 St. Paul, 6, Paris.  
 Delaye, V., rue Ordener, 162, Paris.  
 Desruelles, av. Percier, 8, bis, Paris.  
 Dubos, Ch., av. de la Motte-Piquet, 41, Paris.  
 Duboscq, père et fils (lampe Dr. Regnard), rue  
 des Fossés Saint Jacques, 11, Paris.  
 Duboscq, Jules et A., rue Monsieur le Prince, 30,  
 Paris.  
 Gaulard, F., rue Nollet, 65, Paris.  
 Gérard, A., soc. an. d'électricité, passage Cottin,  
 8, Paris.  
 Gérard, A., place St. Lambert, 5, Liège, Belgique.  
 Girard F. et Cie., boul. Henry IV., 44, Paris.  
 Giraud, rue de Paris, 19, Clichy.  
 Herz Cornélius, rue faub. Montmartre, 10, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspas, Jos., rue Jousse, 12, Liège, Belgique.  
 Lampe Maxim (de Kabath, rept.), rue Fortuny,  
 15, Paris.  
 Lampe Nothomb (Mourlon et Cie.), Bruxelles.  
 Lampe Soleil (syndicat Franc., de la), av. de  
 Wagram, 42, Paris.  
 Lampe Swan (G. Simon, représ.), rue Charlot,  
 85, Paris.  
 Lenczewski et Cie., rue Montagne-Ste.-Geneviève,  
 25, Paris.  
 Maiche, L., et Cie., soc. de l'électrophone, rue  
 Louis le Grand, 3, Paris. Voir index des  
 annonces.  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Michaels, J. P., av. de l'Opéra, 45, Paris.  
 Mildé, Ch., et Cie., av. Laugier, 26, Paris.  
 Mora, boul. Richard Lenoir, 93, Paris.  
 Mors, L., rue Saint Martin, 4, bis, Paris.  
 Postel-Vinay, rue Vanneau, 38, Paris.  
 Pilleux et Quesnot, à l'Italienne, près Beauvais  
 Oise.  
 Puvilland frères, rue Oudinot, 23, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Reynier, E., rue Benouville, 3, Paris.  
 Sautter, L., Lemonnier et Cie., av. de Suffren,  
 Paris.  
 Serrin, V., boul. Saint Martin, 1, Paris.

### Lampes Électriques et Régulateurs (constr. de.)—*continué.*

Siemens frères, rue Picot, 8, Paris.  
 Société concess. de Laing Electric Light &  
 Co., rue Saint Anne, 9, Paris.  
 Société de constructions mécaniques et d'ap-  
 pliquées électriques, rue St. Florentin, 11, Paris.  
 Société l'Eclairage Electrique, système  
 Lochkoff, Jamin, Werdermann, Mahé  
 Lecourbe, 250, Paris.  
 Société électrique Edison, av. de l'Opéra, 33.  
 Société Française d'électricité, F. Girard  
 boul. Henry IV., 44, Paris.  
 Société Lyonnaise de construct. mécaniq.  
 d'éclairage électrique, système Brush &  
 saunne-Lontin, rue de Grammont, 19, P.  
 Société universelle d'électricité, Thomas  
 de Courcelles, 118, Paris.  
 Solignac et Cie., rue Saint Maur, 208, Pa  
 Somée, L., rue Royale, 217, Bruxelles.  
 Suisse, F. rue des Grands Augustins, 23, P.  
 Thiers, Rod., rue Claude Bernard, 91, Pa  
 Trouillet, boul. Sébastopol, 112, Paris.

### Lumière Électrique.

*E.—Electric Light.*

*G.—Elektrisches Licht.*

Albaret, A., Liancourt, Oise.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Baillehache, E. de, rue Ampère, 54, Paris.  
 Ballat, rue St. Fargeau, 3, Paris.  
 Barcellos, O. de, boul. Richard Lenoir, 117.  
 Barbédienne, F., faub. Poissonnière, 30, P.  
 Bernard, J., rue de l'Ecliquier, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Beau et Bertrand-Taillet, rue St. Denis  
 Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 19,  
 Blouzon, E., rue Notre-Dame-de-Nazare  
 Paris.  
 Bourdin, C., avenue de la République, 13.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carré, E., rue de l'Estrapade, 19, et r.  
 Irlandais, 4, Paris.  
 Carré, F., rue de Reuilly, 48, Paris.  
 Chertemps, A., passage St. Sébastien, 1  
 Paris.  
 Chollet et Rézard, rue Belle Cordière, 10,  
 Clémançon, rue Lamartine, 23, Paris.  
 Clémandot, L., rue Brochant, 18, Paris.  
 Cie. l'Eclairage Electrique, rue Lecourbe  
 Paris.  
 Cie. Française d'Électricité (Lampe M  
 Eugène, 47, Neuilly, Seine.  
 Cie. Industrielle et Commerciale Edison,  
 de l'Opéra, 33, Ateliers à Ivry, Paris.  
 Cie. Parisienne d'éclairage par l'électricité  
 Dufresnoy, 25, Paris.  
 Courtot, C., rue Caumartin, 75, Paris.  
 Dandigny, place de la Chapelle, 16, Paris.  
 Debrun et Law, quai Louis XVII, 6, Bori  
 Deherain, P.P., rue d'Argenson, 1, Paris.  
 Delaporte, G., rue des Bourdonnais, 33, P.  
 Desaurier, E., rue Daguerre, 77, Paris.  
 Delaunay, L., avenue Percier, 8 bis, Pa  
 Duboscq, J., rue d'Odéon, 21, Paris.  
 Duboscq, Jules, rue Monsieur le Prince, 30,  
 Duchesne Fournet, le Breuil-en-Auge, Cal  
 Ducommun, boul. de Magenta, 18, Paris.  
 Ducrotet, E., et Cie rue Claude-Bernard, 75  
 Edison, avenue de l'Opéra, 33, Paris.  
 Engel, A., rue de Seine, 72, Paris.  
 French Electrical Power Storage Cie., ave  
 l'Opéra, 5, Paris.



## éctrique—continué.

., rue Lafayette, 115, Paris.  
 e Nollet, 65, Paris.  
 rue des Rigoles, 71, et rue de  
 10, Paris.  
 sago Cottin, 8, Paris.  
 enue d'Eylau, 172, Paris.  
 ue Lafayette, 221, Paris.  
 n, rue St. Maur, 54, Paris.  
 ierre-Charron, 25, Paris.  
 rue Bélidor, 10, Paris.  
 lectrique Société Anonyme au  
 50,000 francs, rue Lecourbe, 250,

Odéon, 21, Paris.  
 uhét, avenue Marceau, 68, Paris.  
 rue Montagne-Ste.-Geneviève, 25.

ue Lafayette, 6, Paris.  
 Margfroy, 7, Paris.  
 de Londres, 6, Paris.  
 de l'Opéra, 45, Paris.  
 rt, boul. Voltaire, 137, Paris.  
 eau, 3, Paris.  
 Château-d'Eau, 44, Paris.  
 artin, 4 bis., Paris.  
 du faub. Poissonnière, 98, Paris.  
 aradis Poissonnière, 47, Paris.  
 Cadet, 27, 29 et 31, Paris.  
 ue Vanneau, 38, Paris.  
 , rue Oudinot, 23, Paris.  
 N. D. de-Nazareth, Paris.  
 de Turenne, 116, Paris.  
 arlot, 28, Paris.  
 Benouville, 3, Paris.  
 St Martin, 1, Paris.  
 rue Picot, 8, Paris.  
 e d'électricité (Lampe Gérard),  
 1, 8, Paris.  
 e des ateliers de constructions  
 t d'appareils électriques, boul.  
 Paris.  
 e des hauts-fournaux, et fon-  
 l'Osne, boul. Voltaire, 58, Paris.  
 ines magnétoélectriques Gramme,  
 5, Paris.  
 e Edison, avenue de l'Opéra, 33,

ce et la lumière" avenue de  
 ris.  
 se de constructions mécaniques  
 lectrique, rue de Grammont, 19,  
 fren, 40, Paris.  
 se de fonderie et laminage, rue  
 rt, 11, Paris.  
 ille d'électricité Tommassi, rue  
 11, Paris.  
 rue St. Maur, 208, Paris.  
 es Grands-Augustins, 23, Paris.  
 e de la Bourse, 31, Paris.  
 is de la Lampe Soleil, avenue de  
 Paris.  
 xtric Light Co., Limited (Nelson  
 recteur), usine, rue des Sarrazins,  
 les Fouillantines, 91, Paris.  
 ul. Sébastopol, 112, Paris.

## ines Électriques.

—*Electrical Machines.*

., 3, Rue Louis le Grand, Paris.  
*annonces.*

## Machines Magnéto-Électriques et Dynamo-Électriques.

*E.—Dynamo and Magneto Electric Machines.*

*G.—Dynamo-Maschinen.*

Agence Générale d'Électricité (Louis Liepmann,  
 directeur), passage des Panoramas, galerie des  
 Variétés, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Boez, Ch., rue Rochecouart, 45, Paris.  
 Bigeon, rue de la Tombe-Issaire, 73, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93 et 95,  
 Paris.  
 Bonnet, G., boul. Filles-du-Calvaire, 5, Paris.  
 Bourdin, C., avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carpentier, et Bianchi, successeurs de Ruhmkorff,  
 rue Champollion, 15, Paris.  
 Carré, Edmond, rue de l'Estrapade, 49, et rue  
 des Irlandais, 4, Paris.  
 Carré, Ferdinand, rue de Rouilly, 48, Paris.  
 Chameroi, H., Maisons-Laffite, Seine et Oise.  
 Chertemps, passage Saint-Sébastien, 11, Paris.  
 Com. Continentale Edison, avenue de l'Opéra,  
 33, Paris.  
 Com. Parisienne d'éclairage par l'électricité, rue  
 Dufresnoy, 25, Paris.  
 Com. universelle d'électricité Tommassi, boul. de  
 Courcelles, 118, Paris.  
 Courtot, rue Caumartin, 75, Paris.  
 Deffez, L. Fr., rue Saint-Séverin, 34, Paris.  
 Delaurier, E., rue Daguerre, 77, Paris.  
 Dubos, C., avenue de la Motte-Piquet, 41, Paris.  
 Ducrotet, E., et Cie., rue Claude-Bernard, 75,  
 Paris.  
 Estéve, A., à la Réole, Gironde.  
 Faure Electric Accumulator Co., avenue de  
 l'Opéra, 5, Paris.  
 French electrical power storage Co., avenue de  
 l'Opéra, 5, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Gérard, A., passage Cottin, 8, Paris.  
 Géraud, F., rue de Paris, 19, Clichy.  
 Geyter, G. de Mouscron, Belgique.  
 Gotendorf, Silvanus N., 166, quai Jemmaple,  
 Paris.  
 Gire, E., rue de la Gaîté, 4, Paris.  
 Hardy (Hayet et Lignereux succ.), avenue de la  
 Motte-Piquet, 6, Paris.  
 Hultz, Alph., rue Danville, 18, Paris.  
 Humboldt, P. Césaire, rue Saint Charles, 77,  
 (Grenelle), Paris.  
 India rubber, gutta percha & tel. works Co.,  
 boul. Sébastopol, 97, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspas, Jos., rue Joufosse, 12, Liège, Belgique.  
 Lampe-Soleil. (syndicat français de la), avenue  
 de Wagram, 42, Paris.  
 Legras, Gr. Th., avenue de Paris, 81, St.  
 Denis (Seine).  
 L'Eclairage électrique Société Anonyme au  
 capital 6,550,000 francs, rue Lecourbe, 250,  
 Paris.  
 Leuzard, Léon, rue d'Arcole, 21, Paris.  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Mildé fils et Cie., rue Langier, 26, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pezzer, Dr. de, rue Sainte-Anne, 65.  
 Pilleux et Quesnot, Italienne, près Beauvais,  
 Oise.  
 Radiguet et fils, boul. des Filles-du-Calvaire, 15,  
 Paris.

## Machines Magneto-Electriques et Dynamo-Electriques—*continué.*

Sautter, Lemonnier et Cie., avenue de Suffren, 26, Paris.  
Siemens frères, rue Picot, 8, Paris.  
Société Gramme, rue Drouot, 15, Paris.  
Société Lyonnaise de constructions mécaniques et de lumière électrique, rue de Grammont, 19, Paris.  
Solignac et Cie., rue Saint-Maur, 208, Paris.  
Trouvé, G., rue Vivienne, 14, Paris.

## Machines pour Essayer les Câbles.

*E.—Cable Testing Machines.*

*G.—*

Chauvin et Marin-Darbel, rue du Banquier, 26, Paris.  
Société anonyme de câbles électriques, boul. Haussmann, 33, Paris.

## Machines à Vapeur.

*E.—Steam Engines.*

*G.—*

Boulet, J., et Cie., faub. Poissonnière, 144, Paris.  
Collet et Cie., rue de Grammont, 20, Paris.  
Farcot, Joseph, St. Ouen, Paris.  
Julien, S., et Cie., boul. de la Villette, 153, Paris.  
Muller, Ph., et Roux, Ch., rue Amelot, 138, Paris.  
Olry et Granddemange, rue St. Maur 83, Paris.  
Piltet, Th., rue Alibert, 24, Paris.  
Rickers, St. Denis, Seine.  
Siemens frères, rue Picot, 8, Paris.  
Société Centrale de constr. de Machines, route d'Aubervilliers, 50, Pantin.  
Société de constr. Méc. d'Anzin établis. de Quillacq, Anzin, Nord.  
Taverdon, Al., rue de l'Arbalète, 36, Paris.  
Varal, Elwell et Middleton, avenue Trudaine, 1, Paris.

## Magnésium.

*E.—Magnesium.*

*G.—*

Delaporte, G., rue des Bourdonnais, 33, Paris.  
Godart et Contenau, rue du Bouloi, 7, Paris.

## Maillechort (Marchands de).

*E.—German Silver.*

*G.—*

Alaine, rue du Chemin-Vert, 26, Paris.  
Caillar, J. M., avenue Parmentier, 16, Paris.  
Desclères, rue des Marais, 66, Paris.  
Gombault et Cie., rue des Marais, 66, Paris.  
Lange, F. A., boul. Voltaire, 1, Paris.  
Muller, P., et Roux Ch., rue Amelot, 138, Paris.

## Manganèse.

*E.—Manganese.*

*G.—Braunstein.*

Billaudot, rue de la Sorbonne, 22, Paris  
Compagnie des mines de manganèse de rue d'Alibert, 10, Paris.  
Delort, E., et Roucolle, Marché des Manteaux, 2, Paris.  
Hubner, A., rue Béranger, 3, Paris.  
Laurent, H., rue des Rosiers, 3 ter., Paris.  
Maguin, A., rue Alibert, 10, Paris.  
Monod et Voisin, rue des Ecoiffes, 25, Paris.  
Rambaud, L., rue Matignon, 34, Paris.  
Regnault, R., et Cie., avenue de P St. Denis.

## Matériel de lignes Télégraph.

*E.—General Suppliers of Telegraphic R.*

*G.—*

Aboilard, rue de Courcelles, 161, Paris.  
Barrière, L., et Cie., rue Saint Sabin, 2  
Bigon, rue de la Tombe-Issore, 73, Paris.  
Bloch, Nathan, et Breger C., rue de l'17, Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Bonis, Mme., rue Montmartre, 18, Paris.  
Borrel, rue des Petits-Champs, 47, Paris.  
Brasseur, L., et de Jaer., O., rue du Co Bruxelles.  
Bréguet, quai de l'Horloge, 39, Paris.  
Bretton frères, rue des Ecoles, 52, Paris.  
Carpentier, J. (ateliers Ruhmkorff), rue polillon, 15, et rue Delambre, 20, Paris.  
Casanova, J., rue Marcadet, 98, Paris.  
Chapart et Seng, Impasse Blottière, 3, Paris.  
Collin, rue Montmartre, 118, Paris.  
Crosin, Arthur, avenue Parmentier, 23  
Debayoux, A., rue des Blancs Mante Paris.  
Degas, Ch., rue de Sèvres, 28, Paris.  
Deschiens, Eug., boul. St. Michel, 123, Paris.  
De Vos, Ch., rue des Croisades, 4, Bruxelles.  
Digney frères, rue des Poitevins, 4, 6 et Dorizon et fils, rue St. Sabin, 58, Paris.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Ducretet, E., et Cie., rue Claude-Bern Paris.  
Dufort, H., rue St. Charles, 77, Paris.  
Dumoulin-Froment, rue Notre-Dame des 85, Paris.  
Esquerré-Cabalé, avenue des Champs Ely Paris.  
Etienne, boul. de Vaugirard, 132, Paris.  
Geoffroy, H., rue de l'Ermitage, 50, Paris.  
Germain, P., Clermont-Ferrand.  
Gloesener, D. A., avenue d'Avroy, Liège, Belgique.  
Gras, Jules, rue de Bellechasse, 41, Paris.  
Gressier, Ed., rue de Lyon, 3, Paris.  
Guggemos, Marices, rue St. Fuscien, 73, Paris.  
Joly, Alf., rue du Cherche-Midi, 19, Paris.  
Lapointe, G., rue St. Sébastien, 9, Paris.  
Lenczewski, Sad., et Cie., rue de la M St.-Geneviève, 25, Paris.  
Mildé, Ch., fils et Cie., rue Sangier, 26, Paris.  
Mora, C., Boul. Richard-Lenoir, 93, Paris.  
Mors, L., rue St. Martin, 4, bis, Grenelle, rue du Théâtre, 48, Paris.  
Netter, J., et Pilard, frères, rue de la N Paris.  
Riechez et Cie, rue d'Argent, 26, B Belgique.  
Sambourg, avenue de Neuilly, 31, à Neu Solignac et Cie., rue St. Maur, 208, Paris.  
Vauzelle et fils, rue St. Maur, 146, Paris.

**Mercur.**

*E.—Mercury.*

*G.—*

rue de la Sorbonne, 22, Paris.  
rue des Rosiers, 23, Paris.  
rue Richard Lenoir, 38, Paris.  
Ch., rue de Châteaudun, 51, Paris.  
le, rue Chapon, 5, Paris.

**Mica (marchands).**

*E.—Mica Merchants.*

*G.—*

(ve.), Mesvres, Saône et Loire.  
H., faub. St. Denis, Paris.

**Minium.**

*E.—Red Lead.*

*G.—*

, boul. du Temple, 50, et boul. Voltaire,  
et Cie., boul. Magenta, 46; usines,  
Landy, St. Denis, 4, Paris.  
e.), Ecluses St. Martin, 27, Paris.  
, boul. de la Villette, 117, Paris.  
H., rue des Rosiers, 3 ter., Paris.  
e.) et Cie., rue du Hautoir, Bordeaux.  
, rue de la Chapelle, 46., Paris.  
J. A., rue Lafayette, 85, Paris.  
onyme des Mines et Fonderies de Pont-  
rue de Châteaudun, 15, Paris.  
A., rue Amelot 43 et 52, Paris.  
J., rue de Canteleu, 8, et boul. Monte-  
ille.

**Modèles (fab. de).**

*E.—Model Makers.*

*G.—Modelle-Fabr.*

J., rue Oberkampf, 75, Paris.  
aug., avenue Parmentier, 107, Paris.  
faub. St. Denis, 202, Paris.  
, rue de Lancry, 56, Paris.  
ue du Chemin Vert, 121, Paris.  
ue St. Maur, 73, Paris.  
, boul. St. Germain, 97, Paris.

**Moteurs Électriques.**

*E.—Electric Motors.*

*G.—Electrische-Motoren.*

Dance, boul. Voltaire, 207, Paris.  
loris, rue St. Victor, 90, Paris.  
ie de la Tombe-Issoire, 73, Paris.  
, boul. des Filles du Calvaire, 5, Paris.  
avenue de la République, 13, Paris.  
mai de l'Horloge, 39, Paris.  
, Rue Sedaine, 28, Paris.  
r. J. (ateliers Ruhmkorff), rue Cham-  
15, et rue Delambre, 20, Paris.  
J., rue de Monceau, 87, Paris.  
L., place du Marché, Levallois-Perret,  
r. G., rue de Menin, 25, Mouscron,  
e.  
E., rue Daguerre, 77, Paris.  
, L., avenue Percier, 8, bis. Paris.  
l., avenue de la Motte-Piquet, 41, Paris.  
E., et Cie., rue Claude Bernard, 75,  
-Froment, rue Notre-Dame des Champs,  
s.

**Moteurs Électriques—continué.**

Estève, A., la Réole, Gironde.  
Félix Co., Sermaize, Marne.  
Flogny, E. F. L., rue Lemercier, 81, Paris.  
Gautier, P., Montfort l'Amaury, Seine et Oise.  
Geneste, Herscher, et Cie, rue du Chemin-Vert, 42,  
Paris.  
Giesbers, J. M., rue de la Bonté, 5, Bruxelles.  
Girard, A., pl. St. Lambert, 5, Liège, Belgique.  
Gloesener, D. A., avenue d'Avroy, 70, bis Liège,  
Belgique.  
Greil, P. G., avenue Vieux Fort, à Vincennes.  
Guichard, P., rue Lafayette, 221, Paris.  
Herz, C., rue du Faub. Montmartre, 10, Paris.  
Huët, Alph., rue Danville, 18, Paris.  
Hurtu et Hautin, rue St. Maur, 54, Paris.  
Journaux, J., rue des Cévennes, 56; rue du Bac,  
37; et boul. Sébastopol, 84, Paris.  
Larmanjat, J., rue Chauveau-Lagarde, 18, Paris.  
Méritens, de, rue Boursault, 44, Paris.  
Michaels, J. P., avenue de l'Opéra, 45, Paris.  
Miguel, J., cours d'Alsace Lorraine, 110,  
Bordeaux.  
Moncomble, E., galerie Vivienne, 9, Paris.  
Muller, E., rue d'Arenberg, 42, Bruxelles.  
Puvilland frères, rue Oudinot, 23, Paris.  
Regnard, rue Charlot, 28, Paris.  
Sautter, Lemonnier et Cie., avenue de Suffren, 26,  
Paris.  
Siemens frères, rue Picot, 8, Paris.  
Société Gramme, rue Drouot, 15, Paris.  
Taverdon, A. L., rue de l'Arbalète, 36, Paris.  
Tissandier, G., avenue de l'Opéra, 19, Paris.  
Trouvé, G., rue Vivienne, 14, Paris.  
Vanderbiste, E., rue de la Montagne, 68, Bruxelles.

**Moteurs à Gaz.**

*E.—Gas Motors.*

*G.—Gas-Motoren.*

Compagnie auxiliaire pour l'éclairage, chauffage,  
et force motrice par le gaz, boul. Magenta, 38,  
Paris.  
Compagnie française de moteurs à gaz, avenue  
de l'Opéra, 15, Paris.  
Ivernois, Comte d', rue d'Anjou, St. Honoré,  
4, Paris.  
Laviornay, boul. de la Villette, 234, Paris.  
Mignon et Rouart, boul. Voltaire, 137, Paris.  
Seraine, J., rue Campagne-Première, 8, bis Paris.

**Nickel.**

*E.—Nickel.*

*G.—Nickel.*

Accault, A., boul. Diderot, 78, Paris.  
Alaine A., rue du Chemin-Vert, 46, Paris.  
Bauduin, C. (A. Delaherche succ.), cité Riverin, 7,  
Paris.  
Billault et Billaudot, rue de la Sorbonne, 22, Paris.  
Bondoux, J., rue Vieille-du-Temple, 30, Paris.  
Borzechy, A., boul. Magenta, 46, Paris.  
Boulenger, A., rue du Vertbois, 4, Paris.  
Cailar, J. M. et Cie., avenue Parmentier, 4, Paris.  
Chailan, M. M. frères, le nickel système Garnier  
société anonyme, rue Montgrand, 45, Marseille.  
Christoffe et Cie., rue de Bondy, 56, Paris.  
Court, rue du Temple, 114, Paris.  
Délair, boul. Richard-Lenoir, 127, Paris.  
Espinasse, E., rue St. Martin, 213, Paris.  
Falcke et Cie., passage des Petites-Ecuries, 20,  
Paris.  
Folie et Denamur, quai Jemmapes, 82, Paris.  
Folie, C., rue St. Maur, 204, Paris.  
Hubner, A., rue Béranger, 3, Paris.

**Nickel—continué.**

Le Nickel, rue de la Chaussée d'Antin, 38, Paris.  
Lévy, Martin, et Plainchault, rue Pierre-Lévy, 3, Paris.  
Mines de Cobalt de l'Aragon, rue Caumartin, 28, Paris.  
Mongenot, E., et Cie., rue Sedaine, 17, Paris.  
Muller, P. et Roux, rue Amelot, 138, Paris.  
Plazenet, de, rue Chapon, 5, Paris.  
Rheims, J., rue du Parc-Royal, 16, Paris.  
Sengel, E., rue Beautreillis, 22, Paris.  
Seward, M. A. et Cie., le nickel, société anonyme, rue Vergniaud, 49, Bordeaux.  
Société anonyme des mines et fonderies de Pontgibaud, rue Châteaudun, 15, Paris.

**Nickeleurs et Nickelure.**

*E.—Nickel Platers.*

*G.—*

André, rue du Pont-au-Choux, 21, Paris.  
Bauduin, C., cité Riverin, 7, Paris.  
Beauferey, L., rue Charlot, 31, Paris.  
Besançon, Ch. (Ducroux succ.), rue Chapon, 10, Paris.  
Boudreaux, L. et fils, rue Monsieur-le-Prince, 27, Paris.  
Boulenger, A., rue du Vertbois, 4, Paris.  
Brisbarre, E., cour Trouillot, 14, Paris.  
Couthier, rue Saintonge, 27, Paris.  
Dechalotte, quai Jemmapes, 88, Paris.  
Delahirsch, A., cité Riverin, 7, Paris.  
Ducroux, rue Chapon, 4, Paris.  
Dufoulon et Regnier, rue Portefoin, 2, Paris.  
Folie et Denamur, quai Jemmapes, 82, Paris.  
Folie, C., rue St. Maur, 204, Paris.  
Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
Garnier, H., rue Morère, 15, bis., Paris.  
Gaspard et Belle, rue de Saintonge, 62, Paris.  
Gérard et Cie., rue Charlot, 62, Paris.  
Girard, faub. St. Martin, 78, Paris.  
Grand-Cyr, rue Portefoin, 9, Paris.  
Grenet frères, rue du Temple, 114, Paris.  
Hamlin, C., rue des Haudriettes, 5 bis., Paris.  
Hauck, rue Lafayette, 220, Paris.  
Huguenot, passage Mémilmontant, 3, Paris.  
Lagriffoul, rue Charlot, 62, Paris.  
Lainé, L., rue Chapon, 22, Paris.  
Landry, rue Pastourelle, 5, Paris.  
Laveur et Cie., rue de Nesles, 13, Paris.  
Lemire et Degueldre, rue Charlot, 77, Paris.  
Le Sueur, H., rue des Petites Ecuries, 32, Paris.  
Lecroart, E., rue St. Maur, 60, Paris.  
Maillé, avenue de la République, 7, Paris.  
Mallié et Gérard, boul. Richard Lenoir, 136, Paris.  
Mauvert, rue Grange-aux-Belles, 35, Paris.  
Ménagé, J., rue Gambey, 22, Paris.  
Moitro, E., rue de Bondy, 80, Paris.  
Moncomble, E., rue Vivienne, 9, Paris.  
Mongenot, E. et Cie., rue Sedaine, 17, Paris.  
Ory, A., rue des Vertus, 20, Paris.  
Perille, J., avenue de Clichy, 98, Paris.  
Pichou, A., rue Notre-Dame-de-Nazareth, 8, Paris.  
Poirier, René, rue de la Roquette, 51, Paris.  
Poirier, rue de l'Estrapade, 21.  
Poulenc et Wittmann (Poulenc frères succ.) rue St. Merri, 7, Paris.  
Société du familistère, représentée par A. Moret, faub. St Martin, 173, Paris.

**Outils pour Électriciens.**

*E.—Electricians' Tools.*

*G.—*

Allaire, A., rue St. Martin, 227, Paris.  
Arizoli, P., rue Pastourelle, 38, Paris.  
Armengaud aîné, rue St. Sébastien, 45, Paris.  
Aubout, L., rue Debelleyne, 28, Paris.  
Barignand et fils, rue Oberkampf, 127, Paris.  
Bourgeois, rue Saint Martin, 10, Paris.  
Cahen, Alb., boul. Saint Denis, 1, Paris.  
Casalonga, D. A., rue des Halles, 15, Paris.  
Clause, rue Denfert Rochereau, 20, Paris.  
Corcellet, Bernard et Cie., pl. Bellcour, 15.  
Courtroy, L., rue Saint Martin, 248, Paris.  
Desnos, C., boul. Magenta, 11, Paris.  
Ferron, Alex., rue des Gravilliers, 11, Paris.  
Henry, Alb., rue de Montmorency, 86, Paris.  
Lapierre, rue Oberkampf, 143, Paris.  
Le Fournier et Maréchal, boul. Sébastien, Paris.  
Mongin, Ed., rue Sedaine, 8, Paris.  
Moynet et Cie., rue des Haudriettes, 4 et 6.  
Pouillot fils, boul. Voltaire, 13, Paris.  
Renard, rue de Gravilliers, 24, Paris.  
Strube, H., rue Campagne-Première, 19.  
Vautrin, J. E., rue du faub. Saint Martin, Paris.

**Papier Bande pour Télégraphes.**

*E.—Telegraph Paper.*

*G.—Papier Fabriken für Telegraphen.*

Carson et Montgolfier, (société anonyme papeteries de Vidalon) Annonay, Ardèche.  
Gravollet, E., boul. Beaumarchais, 38, Paris.

**Paratonnerres.**

*E.—Lightning Conductors.*

*G.—Blitzableiter.*

Ancelot, Th., boul. Edgar Quinet, 18, Paris.  
Beaufils, M. F., boul. St. André, 4, Paris.  
Beignet, rue Montmartre, 96, Paris.  
Bogey et Boige, avenue de Saxe, 216, Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Borrel, rue des Petits-Champs, 47, Paris.  
Buchin, Aug., rue Rolland, 11, Bordeaux.  
Callaud, A., et fils, rue du Bocage, 267, Paris.  
Cartier, Emile, rue Titon, 30, Paris.  
Carue, rue St. Denis, 269, Paris.  
Collin, Aron Fr., rue Montmartre, 118, Paris.  
Deleuil, J. A., rue des Fourneaux, 42, Paris.  
Desseux, rue Grande des Creuses, 8, Paris.  
De Vos, Ch., rue des Croisades, 4, Bruxelles.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Esquerré-Caballé, avenue des Champs Élysées, Paris.  
Fasse, J., rue de l'Hôtel de Ville, 12, Paris.  
Fontenilles, V., boul. Haussmann, 38, Paris.  
Gignou, E., rue St. Ferdinand des Ternes, Paris.  
Gloesener, Dlle. A., avenue d'Avory, Liège, Belgique.  
Guérin, Ch. rue de Naples, 72, Paris.  
Hayet et Lignereux, avenue La Motte-Picquet, Paris.  
Juriant et Magne, rue Pierre-Charron, 25.  
Jaspard, J., rue Joffroy, 12, Liège, Belgique.  
Lichtenfelder, G., avenue de la Grande Armée, Paris.  
Magne, Ch., avenue du Trocadéro, 7, Paris.



**terres—continué.**

de Bac, 49, Rouen.  
P., rue Lafon, 4, Marseille.  
, et Cie. (Soc.), rue de Monceau, 3, et  
gier, 26, Paris.  
Richard-Lenoir, 95, Paris.  
rue St. Martin, 4, bis, Paris.  
re et fils, cours de la Liberté, 3, Lyon.  
ux Hamps, 6, Caen.  
, rue de la Barre, 14, Lyon.  
L., rue de Rome, 78, Paris.  
de Bréa, 20, Paris.  
Lucas, Toulouse.  
faub. St. Martin, 41, et pass. de  
ie, 4, Paris.  
, Capdeville, 12, Bordeaux.  
lliam, rue de Vaugirard, Paris.  
, Fr., Chaussée d'Anvers, 78, Bruxelles.  
3, E. (Maison Niot), rue Mandar, 10,  
  
O., rue de Rémouleurs, 11, Gand,  
i.

**Phares (Construct. de).**

*E.—Lighthouse Engineers.*

*G.—Leuchthurm Ingenieure.*

Fenestre, rue Curial, Villette, 82,

Michel, Phares de l'Empire Ottoman,  
iche, 32 et 34, Paris.  
parisienne d'éclairage par l'électricité,  
esnoy, 25, Paris.  
G., rue des Bourdonnais, 33, Paris.  
res, rue de la Douane, 24, et quai  
11, Paris.  
lenry, rue Lafayette, 6, Paris.  
le, rue Boursault, 44, Paris.  
emonnier et Cie., avenue de Suffren,  
i.  
nyme d'électricité, A. Gérard, passage  
, Paris.

**phor Bronze (Marchands).**

*—Phosphor Bronze Merchants.*

*—Phosphor-Bronze.*

Henry, rue Laffitte, 10, Paris.  
ue de l'Ermitage, 50, Paris.  
Geor., quai Jemmapes, 152, Paris.  
rères, rue St. Maur, 86, Paris.

**ournées pour Appareils Elec-  
triques.**

*and Turners for Electric Appliances.*

rue Rochechouart, 46, Paris.  
fils, rue St. Sabin, 58, Allée Verte, 2,  
  
ue Sébastien, 9, Paris.  
la Pommeraye, avenue Parmentier,  
is.

**Piles Électriques.**

*E.—Electric Batteries.*

*G.—Electrische Batterien.*

Aunay, A d', cité Gaillard, 3, Paris.  
Ballat, rue St. Fargeau, 3, Paris.  
Barbier, C., rue des Quatre-Vents, 6, Paris.  
Barluet et Cie., rue du faub. Poissonnière, 61,  
Paris.  
Bassée-Crosse, rue de Bondy, 92, Paris.  
Baudet, Cloris, rue St. Victor, 90, Paris.  
Beaufils, M. F., boul. St. André, 4, Paris.  
Berrurier, père et fils, rue Caffarelli, 14, Paris.  
Billaudot, rue de la Sorbonne, 22, Paris.  
Biloret et Mora, boul. Richard-Lenoir, 93, Paris.  
Bizot, Jos., Aix-en-Provence.  
Blouzon, E., rue Notre-Dame-de-Nazareth, 30,  
Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Bourdin, C., avenue de la République, 13, Paris.  
Braud, rue de la Madeleine, 32, Bruxelles.  
Bréguet, quai de l'Horloge, 39, Paris.  
Brewer frères, rue St. André-des-Arts, 43, Paris.  
Burrall, Ch., rue Larrey, Paris.  
Callaud, A., et fils., rue de Bocage, 26, Nantes.  
Carré, F., rue de Reuilly, 48, Paris.  
Chapuis, F., rue de Lourmel, 17, Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Cornette, rue Michel-Lecomte, 23, Paris.  
Delaporte, G., rue des Bourdonnais, 33, Paris.  
Delaunay, rue Daguerre, 77, Paris.  
Deleuil, rue des Fourneaux, 42, Paris.  
Deschiens, boul. St. Michel, 123, Paris.  
Desruelles, avenue Percier, 8 bis, Paris.  
De Vos, Ch., rue des Croisades, 4, Bruxelles.  
Belgique.  
Digney, frères, rue des Poitevins, 6 et 8, Paris.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Dubos, avenue de la Motte-Piquet, 41, Paris.  
Duboscq, J. et A., rue de l'Odéon, 21, Paris.  
Duboscq, Jules, rue Monsieur-le-Prince, 30, Paris.  
Ducretet, E. et Cie., rue Claude-Bernard, 75,  
Paris.  
Engel, A., rue de Seine, 77, Paris.  
Estève, A., à la Réole, Gironde.  
Féraud, V. M., rue d'Alésia, 121, Paris.  
Fontaine, rue Monsieur-le-Prince, 18, Paris.  
Frion et Thierri, rue du Roi-de-Sicile, 50, Paris.  
Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
Gaulard, L., rue Nollet, 65, Paris.  
Giesber, rue de la Route, 5, Bruxelles.  
Girard, F., rue des Batignolles, 80, Paris.  
Gloesener, Dlle. A., avenue d'Avroy, 70,  
Bruxelles.  
Goderel, avenue d'Eylau, 172, Paris.  
Guérin, Ch., rue de Naples, 72, Paris.  
Guérin, E., rue Montmorency, 5, Paris.  
Guérot, rue Daguerre, 57, Paris.  
Hubin, G., rue de Turenne, 14, Paris.  
Jourdan, Ch., rue Thiers, 40, Marseille.  
Lallier, (Vve.) et Cie., rue de Buffon, 23, Paris.  
Laurent, rue de l'Odéon, 21, Paris.  
Leclanché, rue Fromentin, 9, Paris.  
Ligras, F. T., avenue de Paris, 81, St. Dennis.  
Létrange, L. et Cie., rue des Vieilles,  
Handriettes, 1, Paris.  
L'Hôte, A., rue Markfoy, 7, Paris.  
Loiseau, E., rue de Seine, 35, Paris.  
Luizard, L., rue d'Arcole, 21, Paris.  
Maiche, L., et Cie., rue Louis-le-Grand, 3, Paris.  
Mangenot, rue d'Ulm, 44, Paris.  
Mathieu, L. A., rue de Saintongo, 20, Paris.  
Michaels, J. P., avenue de l'Opéra, 45, Paris.  
Mignot, L., place Lafayette, 109, Paris.  
Mors, L., rue St. Martin, 4, bis, Paris.

# **Piles Électriques—continué.**

Mourlon, Ch., et Cie., rue de Ruysbroeck, 61, Bruxelles, Belgique.  
 Noé, C. F., rue Laramiguière, 9, Paris.  
 Pia, J., boul. de Belleville, 44, Paris.  
 Planté, G., rue de Tournelles, 56, Paris.  
 Reynier, Emile, rue Benouville, 3, Paris.  
 Sainte, A., rue du Château-d'Eau, 25, Paris.  
 Sanison, F., avenue Duquesne, 39, Paris.  
 Serrin, V., boul. St. Martin, 1, Paris.  
 Simmen, A., rue Dombasle, 55, Paris.  
 Société "la force et la lumière," avenue du l'Opéra, 5, Paris.  
 Société universelle d'électricité Tommasi, rue de Provence, 11, Paris.  
 Somzée, L. rue Royale, 217, Bruxelles.  
 Strebet-Dorleans, Faub. du Temple, 106, Paris.  
 Thiers, Rod., rue Claude-Bernard, 91, Paris.  
 Tissandier, G., avenue de l'Opéra, 19, Paris.  
 Tournade, H., Fondettes, près Tours (Indre et Loire).  
 Trouvé, G., rue Vivienne, 14, Paris.  
 Vildie, J. et fils, Route de Flandres, 48, Pantin, Seine.  
 Warnon, V. J., rue de la Folie-Méricourt, 27, Paris.  
 Weill, M., boul. de Sébastopol, 131, Paris.

## **Platine.**

*E.—Platinum dealers.*

*G.—Platinum—Händler.*

Chapuis, H., rue Grenéta, 36, Paris.  
 Chapuis, P., rue Mandar, 21, Paris.  
 Desmoutis, H. P. et Le Brun et Cie., rue Montmartre, 56, Paris, et à Londres: 8, Southampton-street, Strand, W.C.  
 Eberlin, Ph., rue du Caire, 43, Paris.  
 Faure et Kessler, Clermont-Ferrand.  
 Godart et Contenau, rue du Bouloi, 7, Paris.  
 Morin, Vve., rue Montmartre, 77, Paris.  
 Société Française d'inoxydation et de platinage, rue des Petits-Champs, 76, Paris.

## **Plomb—Mines et Fonderies.**

*E.—Lead Mines and Works.*

*G.—Blei Werke und Schmelzerei.*

Benoist, J., avenue d'Italie, 13, Paris.  
 Cheylus, P., faub. St. Antoine, 21, Paris.  
 Cie. Française des mines et usines d'Escombréra, rue Taibout, 37, Paris.  
 Cie. royale Asturienne, rue de Malte, 3, ter, Paris.  
 Dunon, A., faub. St. Martin, 33, Paris.  
 Faure et Gautier, J. B. fils, rue Grigonan, 65, Marseille.  
 Franck, avenue de Versailles, 6, Paris.  
 Hubin, F., rue de Turenne, 14, Paris.  
 Laveissière, J. J., rue de la Verrerie, 58, Paris.  
 Létrange, L. et Cie., rue des Haudriettes, 1, Paris.  
 Sanchez Torres, F., rue Séguier, 3, Paris.  
 Société anonyme des mines et fonderies de Pontgibaud, rue de Châteaudun, 15, Paris.

## **Poteaux Télégraphiques en fer.**

*E.—Iron Telegraph Poles.*

*G.—*

Boileau père, rue de Sèvres, 11, Paris.  
 Flechet, L. et Cie., rue Lairesse, Liège.  
 Lichtenfelder, G., avenue de la Grande Armée, 45, Paris.  
 Papin, boul. Montparnasse, 51, Paris.  
 Vaucelle et fils, rue St. Maur, 146, Paris.

## **Resorts (fab. de).**

*E.—Spring Makers.*

*G.—Sprungfeder-Fabrikanten.*

Sorgue, P., passage Corbeau, 9, et Faub. Temple, 9, Paris. Ressorts à Boud platine argent et cuivre pour téléphones électricité.

## **Sociétés Savantes.**

*E.—Learned Societies.*

*G.—Wissenschaftliche Vereine.*

Société des ingénieurs civils, cité Rougemont Paris.  
 Société des ingénieurs télégraphistes d'Angle rue de Naples, 4, Paris.  
 Société internationale des électriciens, r. Grenelle, 99, Paris.

## **Sonneries et Signaux Electriques.**

*E.—Electric Bells and Signals.*

*G.—Electriche Glocken.*

Aboillard, L., rue de Courcelles, 161, Paris.  
 Barbier, E., rue Fromentin, 9, Paris.  
 Baron, J., rue Fondandège, 85, Toulouse.  
 Batail, B., Mondet près Conzeins (I Garonne).  
 Beez, Ch., Rochechouart, 45, Paris.  
 Beignet, rue Montmartre, 96, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93, Boge et Boige, avenue de Saxe, 24, Lyon.  
 Boivin, Arsène, rue de l'Abbaye, 16, Paris.  
 Bonis, Mme., rue Montmartre, 18, Paris.  
 Borrel, Arn.-ph., rue des Petits-Champs Paris.  
 Bosio, A., rue Lafayette, 11, Paris.  
 Bourély, F., boul. de Strasbourg, 38, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Brewer frères, rue St. André-des-Arts, 43, Buchin, A., rue Rolland, 11, Bordeaux.  
 Casanova, J., rue Marcadet, 98, Paris.  
 Caslado, G., rue de la Madeleine, 51, Bruxelles.  
 Cazéus, rue Miroménil, 86, Paris.  
 Corpeaux, J., boul. du Nord, 58, Bruxelles.  
 Chardin, Ch., rue de Châteaudun, 5, Paris.  
 Charvin, C., rue Courbin, 4, Bordeaux.  
 Chatelain, V., rue Neuve, 7, Amiens.  
 Chaudron, Léon, boul. St. Germain, 229, 1 Chollet et Bozard, rue Belle Cordière, 10, 1 Choné, Dr., rue de Paris, 157, les Lâlas, 8 Collin, rue Montmartre, 118, Paris.  
 Combettes, L. de, rue de Bondy, 92, Paris.  
 Corcellet, Bernard et Cie., pl. Bellcour, 15, 1 Cornette, rue Michel-le-Comte, 23, Paris.  
 Courtot, C., rue Caumartin, 75, Paris.  
 Constant, Alex., rue Ste. Eulalie, 55, Bort Crosse, rue des Vosges, 3, Paris.  
 De Bar, rue Nationale, 231, Lille.  
 Deboyceaux, A., rue des Blancs-Manteaux Paris.  
 Delamotte et Boyer, passage Marbeuf, 14, Marbeuf, 34, Paris.  
 Deschiens, E., boul. St. Michel, 123, Paris.  
 Dessaux, rue Grande des Creusces, 8, St. Et Digne frères, rue des Poitevins, 4, 6 et 8, Dettmer, N., rue Poncelet, 38, Paris.  
 Douce et Cie., rue de Rivoli, 116, Paris.  
 Ducretet, E., et Cie., rue Claude-Bernard Paris.  
 Esquerré, Cabalé, avenue des Champs-Élysées Paris.

**et Signaux Electriques—cont.**

boul. de Courcelles, 15, Paris.  
 V., boul. Hausmann, 38, Paris.  
 e de Thorigny, 11, Paris.  
 rue St. André-des-Arts, 40, Paris.  
 , rue Taitbout, 6 et 16, Paris.  
 , rue de Varennes, 64, Paris.  
 H., rue des Rigoles, 71, et rue de  
 re, 50, Paris.  
 rue Rochechouart, 17, Paris.  
 rue de Paris, 19, Clichy.  
 eaux, Télégraphe, Grenoble.  
 Mayer, rue Turpin, 28, Lyon.  
 L., rue de Clignancourt, 22, Paris.  
 de la Roquette, 75, Paris.  
 ., rue de Naples, 72, Paris.  
 rue Montmorency, 5, Paris.  
 evos D., rue du Nord, 61, Bruxelles.  
 bourg, Alsace-Lorraine.  
 , rue de Chaillot, 20, Paris.  
 Confort, 14, Lyon.  
 er, Gutta Percha & Telegraph Works  
 ted, boul. de Sébastopol, 97, Paris.  
 t Gripouilleau, Tours.  
 Magne, rue Pierre-Charron, 25, Paris.  
 ne, rue Béliador, 10, Paris.  
 Dulong, 29, Paris.  
 ., rue de la Cérisaie, 13, Montreuil.  
 , rue des Pêcheurs, Mézières.  
 , L. et Cie., rue de la Montagne-St.-  
 3, 25, Paris.  
 es, rue d'Arenberg, 36, Bruxelles.  
 etitqueux, rue Bachelet, 21, Paris.  
 ... boul. d'Enfer, 101, Paris.  
 e Puebla, 28, Lille.  
 , avenue du Trocadéro, 7, Paris.  
 et Cie., rue Louis-le-Grand, 3, Paris.  
 de Bac, 47, Rouen.  
 s, Meyerbeer, 5, Paris.  
 e Lafon, 4, Marseille.  
 ., rue Basse, 64, Lille.  
 Soc. Ch., et Cie., rue Langier, 26,

... rue Neuve, 7, Amiens.  
 rue Galande, 57, Paris.  
 Collas, rue Myrrha, 37, Paris.  
 oul. Richard Lenoir, 93 et 95, Paris.  
 ie St. Martin, 4 bis Paris.  
 rue d'Arenberg, 42, Bruxelles.  
 rue de la Chaussée d'Antin, 64, Paris.  
 ps, rue aux Champs, 6, Caen.  
 ., fils, rue Bailly, 5, Paris.  
 . L., rue de Rome, 78, Paris.  
 st Thomas, A., rue Ravignan, 8, Paris.  
 boul. Malesherbes, 79, Paris.  
 e de la Porte, 24, Paris.  
 ., St. Quentin.  
 rue Frère Orban, 33, Bruxelles.  
 pinal.  
 ce Lucas, Toulouse.  
 ue Notre Dame, 50, bis, Lille.  
 sbourg, Alsace-Lorraine.  
 e., rue d'Argent, 26, Bruxelles.  
 rue Rochechouart, 35, Paris.  
 , avenue de la Gare, 14, Nice.  
 ue St. Laurent, 21, Paris.  
 ., Tournon, Ardèche.  
 et Lorel, E., Brest.  
 rue Capdeville, 12, Bordeaux.  
 i Xavier Eugène, boul. St. Martin,  
 , rue Dombasle, 55, Paris.  
 omyne de l'Avertisseur Electro-  
 que, rue Scribe, Paris.  
 7, place Ducale, 20, Charleville.  
 ieans, faub. du Temple, 106, Paris.

**Sonneries et Signaux Electriques—cont.**

Taillefesse, A., rue Lafayette, 172, Paris.  
 Thevenon fils, rue de Rome, St. Etienne.  
 Vallot fils, rue d'Arcole, 13, St. Etienne.  
 Vanderbiste, Ed., rue de la Montagne, 68,  
 Bruxelles.  
 Van, Hulle F., chaussée d'anvers, 78, Bruxelles.  
 Vasseur, rue de Rumigny, 49, Amiens.  
 Vayet, rue Ferrandière, 22, Lyon.  
 Voghels, rue Marché aux Œufs, Bruxelles.  
 Walcker, W., et Cie., rue Rochechouart, 42, Paris.  
 Wandenberg, H., rue des Trois Bornes, 39, Paris.  
 Zion et Chollet, L., villa d'Orléans, 27, Mont-  
 rouge.

**Spécialités Electriques.**

*E.—Electric Specialities.*

*G.—*

Maiche, L. et Cie., rue Louis le Grand, 3, Paris.

**Sulfate de Cuvie.**

*E.—Sulphate of Copper.*

*G.—*

Lefebvre, Edouard, rue de la Cerisaie, 13, Paris.

**Tableaux indicateurs de Sonneries.**

*E.—Indicators for Electric Bells.*

*G.—*

Lefrey, E., boul. de Strasbourg, 185, Le Havre.  
 Crosso, rue des Vosges, 3, Paris  
 D'Argy, Paris.  
 Debayeux, A., rue des Blancs - Manteaux, 41,  
 Paris.  
 Douce, et Cie., rue de Rivoli, 116, Paris.  
 Guérin, rue de Montmorency, 5, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pelletier, A., rue de Rome, 78, Paris.  
 Sieur, Jules Xavier Eugène, boul. Saint Marcel,  
 38, Paris.

**Tachymètres.**

*E.—*

*G.—*

Buss, W. A., rue Desaix, 1, Paris.

**Télégraphes Portatifs.**

*E.—Portable Telegraphs.*

*G.—*

Gras, Jules, avenue de Lowendall, 8, Paris.  
 Rault, et Cassan, Paris.  
 Trouvé, G., rue Vivienne, 14, Paris.



**Télégraphie (Appareils et fournitures de)***E.—Telegraph Apparatus.**G.—Telegraphische Apparate.*

Arlincourt, L. d', avenue d'Eylau, 157, Paris.  
 Auboin, rue de la Roquette, 21, Paris.  
 Aylmer, J., rue de Naples, 4, Paris.  
 Baillehache, E. de, rue Ampère, 54, Paris.  
 Barbier, rue des Quatre-Vents, 6, Paris.  
 Barbier, E., rue Fromentin, 9, Paris.  
 Barrière et Cie., rue St. Sabin, 22, Paris.  
 Baudot, J. M. E., rue de Vaugirard, 181, Paris.  
 Bignon, rue de la Tombe-Issoire, 73, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93, Paris.  
 Biron, E., rue St. Martin, 237, Paris.  
 Blanc, F., Grenoble.  
 Bloch, N., et C. Breger, rue de l'Entrepôt, 17, Paris.  
 Boivin, A., rue de l'Abbaye, 16, Paris.  
 Bonis, Mme., rue Montmartre, 18, Paris.  
 Borrel, A. P., rue des Petits-Champs, 47, Paris.  
 Breguet, Quai de l'Horloge, 89, Paris.  
 Breton frères, rue des Ecoles, 52, Paris.  
 Brewer frères, rue St. André-des-Arts, 43, Paris.  
 Cacheux, A. F., rue des Vieilles-Haudriettes, 6, Paris.  
 Carpentier, J., rue Champollion, 15, et rue Delambre, 20, Paris.  
 Casanova, J., rue Marcadet, 98, Paris.  
 Cazéus, G., rue de Miromesnil, 92, Paris.  
 Céfre, E., boul. de Strasbourg, 186, Le Havre.  
 Chambrier, E., Charleville, Ardennes.  
 Chamero, H., Maisons Laffite, Seine et Oise.  
 Charlot et Cie., rue St. Ambroise, 25, Paris.  
 Chaudron, L., boul. St. Germain, 229, Paris.  
 Chollet et Rezard, rue Belle Cordière, 10, Lyon.  
 Chutaux, T., place du Marché, 1, Levallois-Perret.  
 Collin, A. F., rue Montmartre, 118, Paris.  
 Combettes, L. de, rue de Bondy, 92, Paris.  
 Courtot, C., rue Caumartin, 75, Paris.  
 Crosse, rue des Vosges, 3, Paris.  
 Deboyeux, A., rue des Blancs-Manteaux, 41, Paris.  
 Degas, Ch., rue de Sèvres, 28, Paris.  
 Delahaye, V., rue d'Aboukir, 3, Courbevoie.  
 Deschiens, E., boul. St. Michel, 123, Paris.  
 Desruelles et Bourdoncle, avenue Percier, 8 bis., Paris.  
 Digney frères, rue des Poitevins, 4, 6 et 8, Paris.  
 Dorizon et fils, rue St. Sabin, 58, Paris.  
 Douce et Cie., rue de Rivoli, 116, Paris.  
 Ducretet, E. et Cie., rue Claude-Bernard, 75, Paris.  
 Dumoulin - Froment, rue Notre - Dame - des-Champs, 85, Paris.  
 Esquerre-Cabalé, avenue des-Champs-Élysées, 28, Paris.  
 Estienne, boul. de Vaugirard, 132, Paris.  
 Felten et Guilleaume, représentés à Paris par Jacquot et Casson, rue des Bourdonnais, 30, Paris.  
 Fontaine-Fourmon, rue Grenier-St.-Lazare, 11, Paris.  
 Fontenilles, V., boul. Haussmann, 38, Paris.  
 Frion et Thierri, rue du Roi-de-Sicile, 50, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Gaubret, P. T., rue de Grenelle, 10, Paris.  
 Gautier, E., rue de l'Université, 48, Paris.  
 Geoffroy, H., rue des Rigoles, 71, et rue de l'Ermitage, 50, Paris.  
 Germain, P., Clermont-Ferrand.  
 Gouamier (Cornat succ.), rue Michel-le-Comte, 23, Paris.  
 Gras, J., rue Bellechasse, 41, Paris.  
 Grossier, E., rue de Lyon, 3, Paris.

**Télégraphie (Appareils et fournitures)***—continué.*

Guérin, Ch., rue de Naples, 72, Paris.  
 Guérin, E., rue Montmorency, 5, Paris.  
 Guérot, rue Daguerre, 57, Paris.  
 Hardy (Hayet et Lignereux succ.), avenue Motte-Piquet, 6, Paris.  
 Houzeau, L., rue Rousselet, 11, Paris.  
 Hequet, rue de Grenelle, 103, Paris.  
 India Rubber, Gutta Percha, and Telegraph Works Co., Limited, boul. de Sébastopol, Paris.  
 Jacquemier, R., avenue de Neuilly, 123, Paris.  
 Jamin, Paul et Cie., rue de Parme, 10, Paris.  
 Jarriant, rue Pierre-Charron, 25, Paris.  
 Jarriant jeune, rue Bédior, 10, Paris.  
 Joly, H., rue du Cherche-Midi, 19, Paris.  
 Jordery, C., rue Montagne, 26, Paris.  
 Lapointe, G., rue St.-Sébastien, 9, Paris.  
 Lefebvre, E., rue de la Cérise, 13, Montreuil.  
 Lefèvre, rue des Repas, 31 et 33, Paris.  
 Legay, rue Langier, 42, Paris.  
 Lenczewski, L. et Cie., rue de la Montagne-Geneviève, 25, Paris.  
 Letourneau, E., avenue Montaigne, 37, Paris.  
 Létrange, L. et Cie., rue des Vieilles-Haudriettes, 1, Paris.  
 Loiseau, A. fils, rue de Richelieu, 2, Paris.  
 Fontaine-au-Roi, 57, Paris.  
 Maiche, L. et Cie., rue Louis-le-Grand, 3, Paris.  
 Makenstein, H., rue St. Jacques, 71, Paris.  
 Mandroux, L. V., rue Caumartin, 71, Paris.  
 Mangenot, rue d'Ulm, 48, Paris.  
 Marc, J., rue Pavée-Marais, 12, Paris.  
 Marcellas, passage Bosquet, 19, Paris.  
 Menier, rue du Théâtre, 7, Grenelle, Paris.  
 Metivier, A., rue de Malte, 19, Paris.  
 Meyer, B., boul. St. Denis, 1, Paris.  
 Michaels, J. P., avenue de l'Opéra, 45, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Mirand, fils, rue Galande, 57, Paris.  
 Monti Ch., claviers, en ivoire et cellulose.  
 Oberkampf, 127, Paris.  
 Mors, L. (succ. de P. Prudhomme), rue Martin, 4 bis ; usine, rue du Théâtre, 48, Paris.  
 Muller, E., rue de Bondy, 66, Paris.  
 Naefer, J., transmetteur Morse circulaire, A Napoli, D., contrôleur de ronde de nuit, Poissonnière, 98, Paris.  
 Noé, C. F., rue Laromiguière, 9, Paris.  
 Olsen, A., la Rochelle.  
 Paris, E., et Cie., rue Paradis-Poissonnière, Paris.  
 Passaquay, Mâcon.  
 Pelletier, A. L., appareils de tous genres, Rome, 78, Paris.  
 Perrody Esprit, rue Chaponnière, 3, G.  
 Pierre, F., boul. Malesherbes, 79, Paris.  
 Ramondot, rue Sedaine, 11, Paris.  
 Rattier et Cie., rue d'Aboukir, 4, usine à (Seine-et-Oise).  
 Rault et Chassin, poste Morse portatif, rue parte, 62, Paris.  
 Rheims et Barrière, rue St. Sabin, Paris.  
 Rouvier, J. A. C., rue de Saive, 21, Nîmes.  
 Sieur, J. X. E., divers systèmes de double mission, boul. St. Marcel, 38, Paris.  
 Société anon. des hauts fourneaux, les duplex, rue de l'Ouest, 46, Paris.  
 Société générale des téléphones, rue Caumartin, 41, Paris.  
 Société universelle d'électricité Tommasi, Provence, 11, Paris.  
 Solignac et Cie., sonneries électriques et indicateurs ; rue St. Maur, 208, Paris.



**phie (Appareils et fournitures de)**  
—*continué.*

., appareil Hughes pour transmission,  
116 et 118, Paris.  
t fils, rue St. Maur, 146, Paris.  
(Postel Vinay, succ.), rue Vanneau, 38,  
appareils pour la correspondance, par un  
ducteur, rue de Boulainvilliers, 57,

**l'élégaphie (Sociétés de).**

*E.—Telegraph Societies.*

*G.—*

e Française des télégraphes de Paris, à  
rk.  
e télégraphe sousmarin entre la France  
gleterre, rue Cambon, 45, Paris.  
lace Philippe de Girard, 3, Lille.  
elegraph company (limited), rue Cau-  
28, Paris, Marseille et Londres.  
ompagnie des télégraphes du nord, rue  
, 3, Paris.

**éphone (Entrepreneurs de).**

*E.—Telephone Contractors.*

*G.—*

., et Cie., 3, rue Louis le Grand, Paris,  
*ex des annonces.*  
et Cie., rue Langier, 26, Paris.  
, rue d'Arcole, 13, St. Etienne.

**léléphones et Microphones.**

*S.—Telephones and Microphones.*

*G.—*

L., rue de Courcelles, 161, Paris.  
ue des Arts, 11, Levallois-Perret.  
he, Ed., rue Ampère, 54, Paris.  
rue du Marteau, 41, Bruxelles.  
, rue Rochechouart, 45, Paris.  
ue de la Tombe Issoire, 72, Paris.  
me., rue Montmartre, 18, Paris.  
quai de l'Horloge, 39, Paris.  
t Cie., rue Coarbin, 4, Bordeaux.  
ie inter. des téléphones, rue des Douze  
s, 24, Bruxelles.  
R., rue Monulpho, 45, Liège, Belgique.  
C., rue Caumartin, 75, Paris.  
ue Nationale, 231, Lille.  
-Labye, rue des Cévennes, 56, Paris.  
t, E., boul. St. Michel, 123, Paris.  
Ve. Charles, rue des Croisades, 14,  
es.  
E. et Cie, rue Claude Bernard, 75, Paris.  
t Pelletier, rue Montmartre, 99, Paris.  
H., rue de Rigoles, 71, Paris.  
A. J., place Saint Lambert, 5, Liège,  
10.  
Charles R., boul. des Capucines, 35,

rod. Van, Chaussée d'Anvers, 78,  
les.  
c. anon.), rue des Croisades, 14, Brux-

, J., rue des Cévennes, 56, Paris.  
ki, L., et Cie, rue de la Montagne  
neviève, 56, Paris.

**Téléphones et Microphones—*continué.***

Maiche, L., et Cie., société de l'électrophone, rue  
Louis le Grand, 3, Paris.  
Maldant, E., rue d'Armaillé, 21, Paris.  
Michailovitch Paul, Gouloubitsky Ateliers, M.  
de Branville, rue de la Montagne, 25, St.  
Geneviève, Représentant, M. Krouchkoll, rue  
Cassini, 6, Inventeur Gouvernement de Kalouga,  
Taroussa, Russia.  
Mors, L., rue Saint Martin, 4, bis. Paris.  
Mourlon, Ch., et Cie., rue de Ruysbroeck, 61,  
Bruxelles.  
Muller, E., rue d'Arenberg, 42, Bruxelles.  
Pain., rue aux Champs, 6, Caen.  
Pelletier, A. L., rue de Rome, 78, Paris.  
Pile, E., Rue de la Perle, 24, Paris.  
Pollard, Paris.  
Postel Vinay, rue Vanneau, 38, Paris.  
Regnard, rue Charlot, 28, Paris.  
Sieur, Jules Xavier Eugène, boul. Saint Marcel,  
38, Paris.  
Société générale des téléphones, rue Caumartin,  
41, Paris.  
Tistu, William, rue de Vaugirard, Paris.  
Trouvé, Gust., rue Vivienne, 14, Paris.  
Wery, Al., rue de l'Université, 58, Liège,  
Belgique.

**Téléphones (Sociétés de).**

*E.—Telephone Societies.*

*G.—Telephonen.*

Compagnie internationale des téléphones, société  
anonyme, 10,000,000 fr., place Vendôme, 15,  
Paris.  
Société générale des téléphones, société anonyme,  
25,000,000 fr., rue Caumartin, 41, Paris.  
Société générale des téléphones, Siège Social à  
Paris; Succursale, Bains Sud Quinconces,  
Bordeaux.  
Société générale des téléphones, place de la Gare,  
1 et 3, Lille.  
Société générale des téléphones, rue Neuve, 1,  
Lyon.  
Société générale des téléphones, Siège Social à  
Paris, rue des Petits Champs, 66, Succursale,  
rue de la République, 14, Marseille.

**Timbres pour, Sonneries (fond et march).**

*E.—Electric Bells for Alarms.*

*G.—*

Biron, Ed., rue St. Martin, 237, fonderie; rue  
Aumaire, 35, Paris.  
Crouzet-Hildebrand, rue de Sambre-et-Meuse,  
13, Paris.  
Leclabart, rue Titon, 14, Paris.  
Letrange, L., et Cie., rue des Haudriottes, 1,  
Paris.  
Mangin, L., boul. Richard-Lenoir, 17, Paris.  
Pelletier, G., fils, rue Bailly, 5, Paris.  
Pierret et Quellier, rue N.D. de Nazareth, 17,  
Paris.

**Tourneurs en Métaux.**

*E.—Metal Turners.*

*G.—*

Dorijon et fils, rue St. Sabin, 58, Paris,  
Droz, Vve, rue Pierre-Levée, 16, Paris.  
Dubourquet, A., boul. Magenta, 33, bis, Paris.

### Lampes Électriques et Régulateurs (constr. de.)

*E.—Electric Lamps and Regulators.*

*G.—Elektrische Lampen.*

Albaret, A. O., passage du Désir, 2 et 4, Paris.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Avoiron et Clement, boul. Voltaire, 56, Paris.  
 Baillehache, E. de, rue Ampère, 54, Paris.  
 Baudet, Cloris, rue Saint Victor, 90, Paris.  
 Bourdin, C., av. de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, Alexis, rue Sedaine, 28, Paris.  
 Carré, Ferd., rue de Reuilly, 48, Paris.  
 Changy, Ch. de., rue des Arts, 29, Levallois  
 Perret, Paris.  
 Chertemps, A. D., passage St. Sébastien, 11,  
 Paris.  
 Clerc, L., av. Wagram, 42, Paris.  
 Compagnie Belge et Hollandaise d'électricité, rue  
 Royale, 80, Bruxelles.  
 Compagnie Continentale Edison, av. de l'Opéra,  
 33, Paris.  
 Compagnie électrique, rue d'Argenteuil, 19, Paris.  
 Compagnie Française d'électricité (lampe Mondos),  
 boul. Eugène, 47, Neuilly.  
 Compagnie gén. Belge de lumière électrique,  
 rue de France, 18, Bruxelles.  
 Compagnie Parisienne d'éclairage par l'électricité,  
 rue Dufresnoy, 25, Paris.  
 De la Roche, Charles Ferdinand, rue Gaston de  
 St. Paul, 6, Paris.  
 Delaye, V., rue Ordener, 162, Paris.  
 Desruelles, av. Percier, 8, bis, Paris.  
 Dubos, Ch., av. de la Motte-Piquet, 41, Paris.  
 Duboscq, père et fils (lampe Dr. Rlegard), rue  
 des Fossés Saint Jacques, 11, Paris.  
 Duboscq, Jules et A., rue Monsieur le Prince, 30,  
 Paris.  
 Gaulard, F., rue Nollet, 65, Paris.  
 Gérard, A., soc. an. d'électricité, passage Cottin,  
 8, Paris.  
 Gérard, A., place St. Lambert, 5, Liège, Belgique.  
 Girard F. et Cie., boul. Henry IV., 44, Paris.  
 Giraud, rue de Paris, 19, Clichy.  
 Herz Cornélius, rue faub. Montmartre, 10, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspas, Jos., rue Jousfosse, 12, Liège, Belgique.  
 Lampe Maxim (de Kabath, rept.), rue Fortuny,  
 15, Paris.  
 Lampe Nothomb (Mourlon et Cie.), Bruxelles.  
 Lampe Soleil (syndicat Franc., de la), av. de  
 Wagram, 42, Paris.  
 Lampe Swan (G. Simon, représ.), rue Charlot,  
 85, Paris.  
 Lenczewski et Cie., rue Montagne-Ste.-Geneviève,  
 25, Paris.  
 Maiche, L., et Cie., soc. de l'électrophone, rue  
 Louis le Grand, 3, Paris. *Voir index des*  
*annonces.*  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Michaëls, J. P., av. de l'Opéra, 45, Paris.  
 Mildé, Ch., et Cie., av. Laugier, 26, Paris.  
 Mora, boul. Richard Lenoir, 93, Paris.  
 Mors, L., rue Saint Martin, 4, bis, Paris.  
 Postel-Vinay, rue Vanneau, 38, Paris.  
 Pilleux et Quesnot, à l'Italienne, près Beauvais  
 Oise.  
 Puvilland frères, rue Oudinot, 23, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Reynier, E., rue Benouville, 3, Paris.  
 Sautter, L., Lemonnier et Cie., av. de Suffren,  
 Paris.  
 Serrin, V., boul. Saint Martin, 1, Paris.

### Lampes Électriques et Régulateurs (constr. de.)—*continué.*

Siemens frères, rue Picot, 8, Paris.  
 Société concess. de Laing Electric Light &  
 Co., rue Saint Anne, 9, Paris.  
 Société de constructions mécaniques et d'appareils  
 électriques, rue St. Florentin, 11, Paris.  
 Société l'Eclairage Electrique, système  
 Lochkoff, Jamin, Werdermann, Mahi  
 Lecourbe, 250, Paris.  
 Société électrique Edison, av. de l'Opéra, 33.  
 Société Française d'électricité, F. Girard  
 boul. Henry IV., 44, Paris.  
 Société Lyonnaise de construct. mécaniq.  
 d'éclairage électrique, système Brush &  
 sienne-Lontin, rue de Grammont, 19, P.  
 Société universelle d'électricité, Thomas  
 de Courcelles, 118, Paris.  
 Solignac et Cie., rue Saint Maur, 208, Paris.  
 Bernzée, L., rue Royale, 217, Bruxelles.  
 Suisse, F. rue des Grands Augustins, 23, P.  
 Thiers, Rod., rue Claude Bernard, 91, Paris.  
 Trouillet, boul. Sébastopol, 112, Paris.

### Lumière Électrique.

*E.—Electric Light.*

*G.—Elektrisches Licht.*

Albaret, A., Liancourt, Oise.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Baillehache, E. de, rue Ampère, 54, Paris.  
 Ballat, rue St. Fargeau, 3, Paris.  
 Barcellos, O. de, boul. Richard Lenoir, 117.  
 Barbedienne, F., faub. Poissonnière, 30, P.  
 Bernard, J., rue de l'Ecliquier, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Beau et Bertrand-Taillet, rue St. Denis  
 Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 19, P.  
 Blouzon, E., rue Notre-Dame-de-Nazareth  
 Paris.  
 Bourdin, C., avenue de la République, 13.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carré, E., rue de l'Estrapade, 19, et r.  
 Irlandais, 4, Paris.  
 Carré, F., rue de Reuilly, 48, Paris.  
 Chertemps, A., passage St. Sébastien, 11,  
 Paris.  
 Chollet et Rézard, rue Belle Cordière, 10.  
 Clémance, rue Lamartine, 23, Paris.  
 Clémendot, L., rue Brochant, 18, Paris.  
 Cie. l'Eclairage Electrique, rue Lecourbe  
 Paris.  
 Cie. Française d'Electricité (Lampe Ma  
 Eugène, 47, Neuilly, Seine.  
 Cie. Industrielle et Commerciale Edison, a  
 de l'Opéra, 33, Ateliers à Ivry, Paris.  
 Cie. Parisienne d'éclairage par l'électricité  
 Dufresnoy, 25, Paris.  
 Courtot, C., rue Caumartin, 75, Paris.  
 Dandigny, place de la Chapelle, 16, Paris.  
 Debrun et Law, quai Louis XVII, 6, Bord  
 Deherain, P.P., rue d'Argenson, 1, Paris.  
 Delaporte, G., rue des Bourdonnais, 33, P.  
 Deslaurier, E., rue Daguerre, 77, Paris.  
 Desruelles, L., avenue Percier, 8 bis, Paris.  
 Duboscq, J., rue d'Odéon, 21, Paris.  
 Duboscq, Jules, rue Monsieur le Prince, 30.  
 Duchesne Fournet, le Breuil-en-Auge, Calv.  
 Ducommun, boul. de Magenta, 18, Paris.  
 Ducretet, E., et Cie rue Claude-Bernard, 75.  
 Edison, avenue de l'Opéra, 33, Paris.  
 Engel, A., rue de Seine, 72, Paris.  
 French Electrical Power Storage Cie., avenue  
 l'Opéra, 5, Paris.

**Electricité—continué.**

Cie., rue Lafayette, 115, Paris.  
 ., rue Nollet, 65, Paris.  
 I., rue des Rigoles, 71, et rue de  
 re, 50, Paris.  
 ., passage Cottin, 8, Paris.  
 ., avenue d'Eylau, 172, Paris.  
 ., rue Lafayette, 221, Paris.  
 ., autin, rue St. Maur, 54, Paris.  
 ., e Pierre-Charron, 25, Paris.  
 ., ine, rue Bélidor, 10, Paris.  
 ., électrique Société Anonyme au  
 ., 6,550,000 francs, rue Lecourbe, 250,  
 e d'Odéon, 21, Paris.  
 e Douhet, avenue Marceau, 68, Paris.  
 ., L., rue Montagne-Sto.-Geneviève, 25.  
 ., rue Lafayette, 6, Paris.  
 ., rue Margfroy, 7, Paris.  
 ., rue de Londres, 6, Paris.  
 ., avenue de l'Opéra, 45, Paris.  
 ., Rouart, boul. Voltaire, 137, Paris.  
 ., Monceau, 3, Paris.  
 ., du Château-d'Eau, 44, Paris.  
 ., t. Martin, 4 bis., Paris.  
 ., rue du faub. Poissonnière, 98, Paris.  
 ., le Paradis Poissonnière, 47, Paris.  
 ., ace Cadet, 27, 29 et 31, Paris.  
 ., y, rue Vanneau, 38, Paris.  
 ., ères, rue Oudinot, 23, Paris.  
 ., rue N. D. de-Nazareth, Paris.  
 ., rue de Turenne, 116, Paris.  
 ., e Charlot, 28, Paris.  
 ., rue Benouville, 3, Paris.  
 ., boul. St Martin, 1, Paris.  
 ., es, rue Picot, 8, Paris.  
 ., nyme d'électricité (Lampe Gérard),  
 ., ottin, 8, Paris.  
 ., nyme des ateliers de constructions  
 ., es et d'appareils électriques, boul.  
 ., 207, Paris.  
 ., nyme des hauts-fournaux, et fon-  
 ., val d'Osme, boul. Voltaire, 58, Paris.  
 ., machines magnétoélectriques Gramme,  
 ., t, 15, Paris.  
 ., rique Edison, avenue de l'Opéra, 33,  
 ., force et la lumière" avenue de  
 ., Paris.  
 ., nnaise de constructions mécaniques  
 ., re électrique, rue de Grammont, 19,  
 ., Suffren, 40, Paris.  
 ., sienne de fonderie et laminage, rue  
 ., i-vert, 11, Paris.  
 ., verselle d'électricité Tommassi, rue  
 ., ce, 11, Paris.  
 ., Cie., rue St. Maur, 208, Paris.  
 ., ue des Grands-Augustins, 23, Paris.  
 ., place de la Bourse, 31, Paris.  
 ., nçais de la Lampe Soleil, avenue de  
 ., 42, Paris.  
 ., l Electric Light Co., Limited (Nelson  
 ., l, directeur), usine, rue des Sarrazins,  
 ., ue des Feuillantines, 91, Paris.  
 ., , boul. Sébastopol, 112, Paris.

**Machines Électriques.**

*E.—Electrical Machines.*

*G.—*

t Cie., 3, Rue Louis le Grand, Paris.  
*des annonces.*

**Machines Magnéto-Électriques et  
 Dynamo-Électriques.**

*E.—Dynamo and Magneto Electric Machines.*

*G.—Dynamo-Maschinen.*

Agence Générale d'Électricité (Louis Liepmann,  
 directeur), passage des Panoramas, galerie des  
 Variétés, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Becz, Ch., rue Rochechouart, 45, Paris.  
 Bigeon, rue de la Tombe-Issoire, 73, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93 et 95,  
 Paris.  
 Bonnet, G., boul. Filles-du-Calvaire, 5, Paris.  
 Bourdin, C., avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carpentier, et Bianchi, successeurs de Ruhmkorff,  
 rue Champollion, 15, Paris.  
 Carré, Edmond, rue de l'Estrapade, 49, et rue  
 des Irlandais, 4, Paris.  
 Carré, Ferdinand, rue de Reuilly, 48, Paris.  
 Chameroy, H., Maisons-Lafitte, Seine et Oise.  
 Chertemps, passage Saint-Sébastien, 11, Paris.  
 Com. Continentale Edison, avenue de l'Opéra,  
 33, Paris.  
 Com. Parisienne d'éclairage par l'électricité, rue  
 Dufresnoy, 25, Paris.  
 Com. universelle d'électricité Tommassi, boul. de  
 Courcelles, 118, Paris.  
 Courtot, rue Caumartin, 75, Paris.  
 Deffez, L. Fr., rue Saint-Séverin, 34, Paris.  
 Delaurier, E., rue Duguerre, 77, Paris.  
 Dubos, C., avenue de la Motte-Piquet, 41, Paris.  
 Ducretet, E., et Cie., rue Claude-Bernard, 75,  
 Paris.  
 Estéve, A., à la Réole, Gironde.  
 Faure Electric Accumulator Co., avenue de  
 l'Opéra, 5, Paris.  
 French electrical power storage Co., avenue de  
 l'Opéra, 5, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Gérard, A., passage Cottin, 8, Paris.  
 Géraud, F., rue de Paris, 19, Clichy.  
 Geyter, G. de Mouscron, Belgique.  
 Gotendorf, Silvanus N., 166, quai Jemmapes,  
 Paris.  
 Gire, E., rue de la Gaité, 4, Paris.  
 Hardy (Hayet et Lignereux succ.), avenue de la  
 Motte-Piquet, 6, Paris.  
 Hultz, Alph., rue Danville, 18, Paris.  
 Humboldt, P. Césaire, rue Saint Charles, 77,  
 (Grenelle), Paris.  
 India rubber, gutta percha & tel. works Co.,  
 boul. Sébastopol, 97, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspas, Jos., rue Joufosse, 12, Liège, Belgique.  
 Lampe-Soleil. (syndicat français de la), avenue  
 de Wagram, 42, Paris.  
 Legras, Gr. Th., avenue de Paris, 81, St.  
 Denis (Seine).  
 L'Eclairage électrique Société Anonyme au  
 capital 6,550,000 francs, rue Lecourbe, 250,  
 Paris.  
 Leuzard, Léon, rue d'Arcole, 21, Paris.  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris  
 Mildé fils et Cie., rue Langier, 26, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pezzer, Dr. de, rue Sainte-Anne, 65.  
 Pilleux et Quennot, Italienne, près Beauvais,  
 Oise.  
 Radiguet et fils, boul. des Filles-du-Calvaire, 15,  
 Paris.

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**ANNUAIRE ÉLECTRIQUE**  
**DES**  
**ANNONCES FRANÇAISES.**

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**J. A. BERLY,**  
*Ingénieur Civil et Electricien,*  
**16, NEW BRIDGE STREET,**  
**LONDON, E.C.,**

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Correspondant anglais de { "L'Electricien" de Paris ;  
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*F.—Accumulateurs d'Electricité.*

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r, Dr. E., Leipzig.

: Aron, Berlin.

N. J., Wien, Kettenbrückengasse, 20.

Dr. A., Underberg.

ad Wolf, Wien, Van Suretengasse, 12.

n, Underberg.

, O., Strassburg.

K. W., Professor, Prag.

### Asbest-Fabriken und Händler.

—*Asbestos Manufacturers and Dealers.*

*F.—Amiante (Fab. d').*

Co., Berlin, Neu Kölln a/W. 16.

L., Berlin, Lindenstr. 21/22.

: Co., Berlin, Rosenthalerstr. 19.

& Co., Berlin, Kochstr. 73.

t & Co., Wien, Oppolzgasse, 4.

### Beleuchtungs-Artikel.

*E.—Light Fitting Manufacturers.*

—*Eclairage (Fab. d'appareillage d').*

: Sohn, Berlin, Alte Jacobstr. 2.

en, G., sr., Köln a/Rh.

Co., Berlin, Seydelstr. 24.

& Robert, Berlin, Ritterstr. 31.

Devos, Berlin, Gitschinerstr. 74.

Nat., Halle a/S.

: Co., Berlin, U. d. Linden 66.

: Moedebeck, Berlin, Stralauerplatz 6/7.

J. E., & Neuhardt Fr., Wien, Stolzen-  
gasse, 6.

& Hees, Berlin, Kommandantenstr. 53.

Berlin, Andreasstr. 72/73.

Mois, Sigmaringen.

: Hauschner, Berlin, Friedrichstr. 233.

### Beleuchtungs-Artikel.—*Fortsetzung.*

Spinn, J. C., & Sohn, Berlin, Wasserthorstr. 9.

STAUDT, EMIL, FRANKFURT A/M.

Stern, L., Aachen.

Stobwasser, C. H., & Co., Berlin, Wilhelmstr.

Tritschler, Winterhalter & Co., Oedhütte bei  
Fürth.

Valentin, J., Frankfurt a/M., Neue Mainzerstr.  
56.

Westphal & Co., Berlin, Kommandantenstr. 41.

### Blitzableiter-Fabriken.

*E.—Lightning Conductor Manufacturers.*

*F.—Paratonnerres (Fab. de).*

Bein, Adolf. & Co., in Görz (Istrien) Cypressi, 2.

Egger, B., Budapest, Rudolfo Quai, 8.

Harrach, Georg, München, Dachauerstr. 35.

Kernaul, J., München, Kreuzstr. 25.

Kirchhoff, H., Berlin, N., Chausseestr. 77.

Mayrhofer, Georg, Wien, Wipplingerstrasse, 27.

Mix & Genest, Berlin, Prinzessinnenstr. 23.

Ulfort, Berlin, Schönhauserallee 122.

Wehr, Berlin, Ritterstr. 49.

Wolters, W., Wien, Kärntnerstrasse, 30.

### Boussolen.

*E.—Compasses.*

*F.—Boussoles.*

Skriwanek, Franz, Wien, Breitogasse, 21.

### Braunstein.

*E.—Manganese.*

*F.—Manganèse.*

Deberto, Ivan, Agram, Ilica, 5.

MINNER, WILHELM, ARNSTADT, THÜR.

### Codex für Telegraphie.

*E.—Telegraphic Codifiers.*

*F.—Codificateurs Télégraphiques.*

Schacht & Westerich, Hamburg.

**Draht-Fabriken.**

*E.—Wire Manufacturers.*

*F.—Tréfileurs.*

Aachener Hütten - Actien - Verein, Rothe Erde b/Aachen.  
 Actiengesellsch. f. Drahtfabr., Eschweiler b/Aach.  
 Adrian, Fr., Berlin, SW., Alexandrinenstr. 25.  
 Arley, Fr., Altena i/Westph.  
 Asten, v. & Lynen, Stolberg b/Aachen.  
 Auffermann, J., Barmen.  
 Aurnhammer, A., Treuchtlingen.  
 Bader, Wilh., Pulsnitz i/S.  
 Basse & Solve, Altena i/Westph.  
 Becker & Co., Johanniethal b/Iserl.  
 Becko, H. von der, Dicken b/Iserl.  
 Becke, von der, & Co., Hemer, Westph.  
 Bockert, C., Ulm.  
 Beling, B., Söhne, Eisen, Hollenthal b/Kirchsaiffen, Westph.  
 Berberich, F., Hanau a/M.  
 Bergbau- & Hütten-Actiengesellschaft, Altenkunden a/Lenno.  
 Berger, J. U., & Sohn, Schwabach, Baiern.  
 Berg, Carl, Eveking b/Werdohl i/W.  
 Bernirighaus, C., Elberfeld.  
 Boecker, Fr., & Sohn, Hohenlimburg.  
 Boecker & Haver, Hohenlimburg.  
 Boecker & Co., Schalke, Westph.  
 Boesner, F., Augustenthal b/Neuw.  
 Bondy, Anton, & Sohn, Wien VII. Neutiftgasse, 66.  
 Böhmes, Aug., Liegnitz, Schles.  
 Class, J. A., Altena i/Westph.  
 Desmossieurs, F. A., Friedrichsthal b/Plettenb.  
 Dinke, C. F., Ringstein b/Büren i/W.  
 Dörseler & Co., Werdohl, Westph.  
 Drahtwaren-Fabrik Falkau, Falkau, Baden.  
 Draht- & Schrauben-Fabrik, Falkau, Baden.  
 Dreher & Sohn, Gerresheim b/Düsseld.  
 Dresler, H. A., Siegen.  
 Dresler, H. A., & W., Creuzthal b/Siegen.  
 Düsseldorf Eisen- & Draht-Industrie, Düsseldorf-Oberbilk.  
 Eisen- und Drahtwerk Erlau b/A., Erlau b/Aalen.  
 Engler, J., Bornheim.  
 Engster, J., Augsburg.  
 Fauler, P. H., Freiburg, Baden.  
 Fecken, J. umspinn. Draht, Anrath b/Cref.  
 Felten & Guillaume, Cöln.  
 Fischer, Gebr., Evingsen b/Altena.  
 Franck & Co., Schlettstadt i.E.  
 Geck, Gebr., Rahmede b/Altena.  
 Geitner, Dr., Auerhammer, Sachsen.  
 Gilardi, Jac., Allersberg b/Roth a/Sand.  
 Goswin, Heinr., Ihmert b/Iserlohn.  
 Grieshaber, Gebr., Triberg, Baden.  
 Guttenberg, v. & zu, Lauf, Baiern.  
 Heckel, G., St. Johann-Saarbrücken.  
 Hecker, Chr. Gottl., Leipzig.  
 Hesse, F. A., Söhne, Hedderheim bei Frankfurt a/M.  
 Hirsch, A., & Co., Cassel.  
 Holdhaus, W., Altemühle b/Werdohl.

**Draht-Fabriken.—Fortsetzung.**

Hühnerkopf, J., Telegr., Erlangen.  
 Hühnerkopf, G., jr., Erlangen.  
 Kaiser, J. G., Unterkochen, Württemb.  
 Katerlöh & Niggeliet, Plettenberg i/W.  
 Kern, H., & Co., Gleiwitz, Schles.  
 Kissing & Müllmann, Menden.  
 Kleinholz, Herm., Oberhausen.  
 Klinke, Fr., Söhne, Altena i/Westph.  
 Kock, C. J., Bergwerkdraht, Hohenlimburg.  
 Krämer, Gebr., St. Ingbert, Pfalz.  
 Krieger & Co., Pforzheim.  
 Kufferath, A., Mariaweller b/Dürren.  
 Kuhlmann, Grüne b/Iserl.  
 Kuhn, E., versilb. Drähte, Nürnberg.  
 Leuchtenberg, N., Duisburg.  
 Liese, Joh. Friedrich, Wien, Zollergasse, 36.  
 Messing-Gewerkschaft, Oese b/Iserl.  
 Neue Berliner Messingwerke, Berlin, SW., Kstr. 30.  
 Neufeld, C. L., Dortmund.  
 Noell, Casp., Vogelberg b/Lüdensch.  
 Noell & Co., Messingw., Lüdenscheid.  
 Obermaier, J., Nürnberg, Untere Baustr. 20.  
 Obermaier, J., Telegraphendraht, Nürnberg.  
 Pauly-Stahel, G., & Co., Mengen bei Würzb.  
 Reinhard, G., Schwelm.  
 Reinhardt, C., Schmalkalden, Thür.  
 Reuter, A., Lösnitz i/S.  
 Rhein. Walzwerk, E. Böcking & Co., Mülheim.  
 Risse & Schöneberg, umspinn. Drähte, Iserl.  
 Rohländer, C. D., Stephanopel b/Huer.  
 Rohr, G., Caldenhausen b/Uerdingen.  
 Roth, Heck & Schwinn, Ixheim b/Zweibr.  
 Sasserath, F. A., Berlin, SO., Schmidtstr. 37.  
 Schacherer, C., Telegraphen, Mannheim.  
 Schacherer, Carl, Mannheim.  
 Schleicher & Sohn, Aachen.  
 Schleip, Gebr., Kusel, Rheinpf.  
 Schleith, Gebr., & Co., Wisloth, Baden.  
 Schmidt, Gust., & Sohn, Einsal b/Altena.  
 Schmidt, W., Elverlingsen b/Werdohl.  
 Schönemann, F., München.  
 Schumann & Zersch, Salzwedel.  
 Selter, Ludw., Eisendraht, Altena i/Westph.  
 Simon, A., Aalen, Württemb.  
 Siringhaus, G., Menden.  
 Sühngen & Bolenius, Bruch b/Schwelm.  
 Spatz, Wwo., Hausimfelde b/Halle a/S.  
 Spelsberg & Klinke, Rathmecke b/Lütenschei.  
 Stahel, Pauly, Mengen, Württemb.  
 Steinhauser Draht-Industrie, Bommern b/Wit.  
 Stieber, Joh. F., Roth b/Nürnberg.  
 Trurnit, Gebr., Karlsruh b/Menden.  
 Ukana, Theod., Papenburg, Hanau.  
 Voss, Seisenschmidt & Schröder, Plettenberg i/Walzholz, C. D., Hohenlimburg.  
 Weiller, Lazare, Wien, Bellariastr. 8.  
 Westphälischer Draht-Industrie-Verein, Ha i/Westph.  
 Westphälische Union, Hamm i/Westph.  
 Westph. Union, Actiengesellsch., Bellecke.  
 Westph. Union, Actiengesellsch., Lippstadt.  
 Westph. Union, Actiengesellsch., Nachrodt.



**Draht-Fabriken.—Fortsetzung.**

Wieland & Co., Ulm.  
Wild, Arn., Gemünd, Rheinpr.  
Wilke, H. D., Letmathe.  
Wolfart, G., Ammendingen b/Memmingen.  
Wolff, Gebr., Nheim a/Rh.  
Witte & Kämper, Osnabrück.  
Zugmayer, Georg & Söhne, Wien, Bräunerstr. 10.

**Drahtseile, Kabel, etc.**

*E.—Cable and Wire Rope Manufacturers*

*F.—Câbles et Fils télégraphiques (Fab. de).*

Bellmann, Berlin, Sophienstr. 17.  
Bubman, W., & C. Hirschman, Wassertrüdingen.  
Egydier, Eisen und Stahl Industrie Gesellschaft, Wien, Elisabethstr. 13.  
Felten & Guilleaume, Cöln.  
Hesse, F. A., Söhne, Hedernheim.  
Kössel, Otto, & Sohn, Hannover.  
Mix & Genest, Berlin S. Wasserthorstr. 34.  
Neue Berliner Messingwerke, Berlin, Kochstr. 30.  
Oberwarth, Berlin, Zimmerstr. 33.  
Pauly, G., & Co., Mengen, Württemberg.  
Schwartz, Ad., & Co., Berlin, Kochstr. 73.  
Sorge & Schma, Berlin, Greifswalderstr. 22.  
SPEISER, CARL, NÜRNBERG.  
Westphälische Union-Werke, Hamm.

**Dynamo-Maschinen.**

*E.—Dynamo-Machine Manufacturers.*

*F.—Machines Dynamo Electriques (Fab. de).*

Edelmann, Dr. M. Th., München.  
Egger, Kremenezky & Co., Wein, Grünethor-gasse, 19.  
Einstein, J., & Co., München.  
Fein, C. & E., Stuttgart.  
Fraas, Joh., München.  
Fraas. Gebrüder, Wunsiedel, Bayern.  
Ganz & Co., Wien, Schwartzenbergplatz 6.  
Heller, Friedrich, Nürnberg, Vordere Sternng. 12.  
Kröttlinger, Franz, Wien, Schlossgasse, 4.  
Lamberg, Alex. Wilh., Linz, Stiftergasse, 10.  
Mayer und Wolf, Wien, Van Swietengasse, 12.  
Neumann, Schwarz & Weil, Freiburg i/Baden.  
Piette & Krizik, Pilsen, Böhmen.  
Plössel, S., & Cie., Wien, Goldegasse, 6.  
Rychnowski, Franz, Lemberg, Ossolinskigasse, 10.  
Schuckert, Sigmund, Nürnberg.  
Schwerd, C. & E., Karlsruhe.  
Siemens & Halscke, Berlin.

**Eisenbahnbau-Unternehmer.**

*E.—Railway Contractors.*

*F.—Chemins de fer (Entrepreneurs de).*

Bachstein, Berlin, Grossbeerenstr. 89.  
Davy, Donat & Co., Berlin, v. d. Heydtstr. 4.  
Görding & Birnbaum, Berlin, Lützowstr. 85.  
Hornemann & Co., Berlin, Greifswalderstr. 8.  
Marcks & Balke, Berlin, Hornstr. 3.

**Elektro-Techniker.**

*E.—Electricians.*

*F.—Electriciens.*

Aron, Dr., Berlin.  
Bähr, Hugo, Dresden.  
Blänsdorf, Richard, Frankfurt a/M., Kaiserstr. 25.  
Brückner, Ross & Consorten, Wien, Baumgasse 6.  
Brunn, Otto, Dresden.  
Czerny, Paul, Mähr Ostrau, 606.  
Daninger, Adolf, Wien, Minoritenplatz, 4.  
Eckart, Gebr., & Heinrich Rabe, Hanau.  
Edelmann, Dr. M. Th., Gabelsbergerstr. 76, München.  
Ehrenberg, W. von, Zürich.  
Friedländer, Josef, Wien, Hintere Zollamtsstr. 13.  
Frischen, J., Berlin, SW., Gitschinerstr. 107.  
Gentili, Amadeo, Berlin, Voss Strasse 13.  
Grünfeld, August Edward, Wien, Ottakring Laudongasse, 21.  
Harlacher, A. R., Prag, Palackygasse, 5.  
Hauck, W. G., Wien, Kettenbrückengasse, 20.  
Hedinger, Dr. A., Stuttgart, Friedrickstr. 4.  
Hausmann, Johann, Mühlheim a/Rh.  
Hummel, Georg, Moosburg, Oberbayern.  
Jenc, Johann, Pola (Istrien).  
Jeullig, Max, Wien, Jacobergasse, 8.  
Kittel, Adolf, Wien, Kaiserstr. 74.  
Kratschner, Hans, Wien, Währing, Wienerstr. 16.  
Krösswang, Louis, Wr. Neustadt, Bräunlich-gasse.  
Leuner, Oscar, Dresden, kgl. Polytechnikum.  
Lipp, Josef Wilhelm, Wien, Nussdorferstr.  
Lowenfeld, Dr. Leopold, München, Gärtnerplatz, 2.  
Mach, Prof. Dr. Ernst, Prag, Weinberggasse, 3.  
Mendel, Berthold, Berlin, Grosse Friedrichstr. 68.  
Metzger, Alt-Breisach i/Br.  
Michael, Dr. J., Hamburg, Neuerwall, 44.  
Moessen, Robert, Wien, Alleegasse, 38.  
Miller, Oscar von, München.  
Nippoldt, Dr. W. A., Frankfurt a/M.  
Ott, A., Kempten (Bayern).  
Pfaundler, Dr. Leopold, Innsbruck, Meinhartstr. 3.  
Pierre, Dr. Victor, Wien, Wohllebengasse, 14.  
Rack, A. & Co., Wien, Praterstr. 47.  
Salcher, Dr. Peter, k. k. Marine Akademie, Professor in Fiume.  
Scharnweber, Ludwig, Karlsruhe i/B.  
Scheuren, Dr., Kiel.  
Schmidt, Carl Gust., Chemnitz (Sachsen), Wiesenstr. 53.  
Schmidt, Franz, Prag, Ferdinandstr. 38.  
Schöneich, Carl, Kattowitz, O/Schl.  
Siemens, Arnold, Berlin, SW., Markgrafenstr. 94.  
Siemens, Wilhelm, Berlin, SW., Markgrafenstr. 94.  
Siemens, Dr. Werner, Berlin, SW., Markgrafenstr. 94.  
Slaby, Dr., Berlin, C., Gertraudenstr. 25.  
Siemsen, Rudolf, Hannover.  
Stefitschek, Franz, Wien, Bürgerspitalgasse, 20.  
Stein, Dr. S. H., Frankfurt, a/M., Kaiserstr. 25.  
Stummer, Rudolf, v. Traunfels & Josef Krämer, Wien Maximilienstr. 8.  
Uppenborn, F., Nürnberg.

**Elektro-Techniker.—Fortsetzung.**

Voss, J. Robert, Berlin, N.O., Pallisadenstr. 20.  
Waltenhofen, Dr. Adalbert von, k. k., Regierun-  
grath und Professor, Prag.  
Walter, Jean Baptiste, Hof, Bayern.  
Wenzel, Wilhelm, Wien, Friedrichstr. 2.  
Zenger, Carl Wenzel, Prag, Nostitzgasse, 5.  
Zetzsche, Dr., Berlin, N., Weissenburgerstr. 66.  
Zeufelhart, J. N. Wien, Grosse Neugasse, 1.

**Electrische Agenturen.**

*E.—Electrical Agencies.*

*F.—Agences electriques.*

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**Electrische Apparate.**

*E.—Electrical Apparatus Makers.*

*F.—Appareils electriques (Fab. d').*

Aleiter, Mart., Mainz.  
Bischof, Berlin, Oranienburgerstr. 75.  
Böhm & Wiedemann, München.  
Bornhardt, A., Braunschweig.  
Braun & Heider, Wien, Schwarzenbergplatz 6.  
Czeija, Carl, Wien, Zieglergasse 27.  
Dölcher, Charles, Wien, Gumpendorferstr. 6.  
Dold, Ch., Luxemburg.  
Eck, Wilhelm, Berlin, Wilhelmstr. 121.  
Fein, C. & E., Stuttgart.  
Findeisen, Th., Berlin, Jägerstr. 75/76.  
Geiss, Ch., Bockenheim.  
Götze, F.O. R., Leipzig, Hartelstrasse 6.  
Hagedorn, Berlin, Ritterstr. 75.  
Hartmann, E. & Co., Würzburg.  
Miller Ritter v. Hauonsfels, A., Gray, Sperbers-  
bachgasse 26.  
Haviland, Robert Langstaff, Wien, Stoss in  
Himmell 3.  
Henning, Berlin, Gartenstr. 58.  
International Electric Company, Wien, Campner-  
Strasse 43.  
Jirasko, Josef, Wien, Margarethenstrasse 36.  
Krüger, Berlin, Simeonstr. 20.  
Kunzmann, Berlin, Oranienstr. 23.

**Electrische Apparate.—Fortsetzung.**

Lotter, J., Frankfurt a/M.  
Mahlor & Eschenbacher, Wien, Maximilianstr. 1  
Mayrhofer, Georg, Wien, Wipplingerstrasse 27  
Meer, Gebr., M.-Gladbach.  
Oettel, Berlin, Schmidstr. 31.  
Peschel, Berlin, Müllerstr. 3a.  
Queva, Berlin, Breslauerstr. 3a.  
Reiner, Frederic, München, Müllerstrasse 48c.  
Reinhardt, C. F. & W., Berlin, Rosenstr. 29.  
Reiniger, E. M., Erlanger (Bayern), Schlo-  
platz 3.  
Reutlingen, B. C., Frankfurt a/M.  
Rosenthal, Berlin, Chausseestr. 113.  
Schick, Bernard, Wien, Piastengasse 42.  
Schlag & Behrend, Berlin, Alexanderstr. 70.  
Schöne, Edwin Floreny, Gross Rührad  
(Sachsen).  
Schulmeister, Ludwig, Wien, Lerchengasse 2.  
Sendtner, Michel, München, Schillerstrasse 22  
Siemens & Halske, Wien, Apostelgasse 14.  
Sillas, Ferdinand, Wien, Opernring 19.  
Sokolt, Gebr., Berlin, Plantufer 3.  
Stern, L., Essen a/R.  
Trempler, Berlin, Mariannenstr. 35.  
Voss, Berlin, Pallisadenstr. 20.  
Weichmann, Johann, München, Müllerstrasse:  
Weill, Gebr., Frankfurt a/M.  
Wilk, Aug., Darmstadt.  
Wolters, W., Wien, Kärntnerstrasse 30.  
Zehle, Berlin, Scalitzerstr. 46.  
Ziembinski, Stanislaus, Wien, Madalenenstr. 1

**Electrische Batterien.**

*E.—Electric Battery Makers.*

*F.—Piles electriques (Fab. de).*

Baudach, Herrm., Bunzlau.  
Ernst, C. F., Stettin.  
Greb, W. & Co., Frankfurt a/M.  
Haertelt, H., Liegnitz i/Schl.  
Hagen, W. von, Frankfurt a/M.  
Lautensack, Daniel, Wien, Volkertplatz 2.  
Raschke, H. F. J., & Co., Stettin.  
Reluck, Gustav, Prag, Alstadt, Botlehensph  
251.  
Wolters, W. Wien, Kärntnerstrasse 30.  
Zander & Hoff, Frankfurt a/M.

**Electrische Beleuchtung.**

*E.—Electric Lighting Contractors.*

*F.—Eclairage électrique (Entrepreneurs pour)*

Baehr, Hugo, Dresden.  
Bau, Berlin, Hasenbade 36.  
Boeddinghaus, Jul., Düsseldorf.  
Böttner, Aug., Zwickau.  
Campbell, Wm., & Co., Hamburg, Neuerwall  
Elsässische Electricitäts-Gesellschaft, Strasbu  
Felten & Guillaume, Köln.  
Greiner & Friedrichs, Stützenbach.  
Hagedorn, Berlin, Ritterstr. 75.  
Hartz, P. F. A., Hamburg, alte Bärse 8.

**Electrische Beleuchtung.—Fortsetzung.**

Heller, Fried., Underberg.  
 Hennig, Berlin, Gartenstr. 58.  
 Hennig, O., Berlin, Invalidenstr. 127.  
 Horn, Berlin, Hollmanstr. 35.  
 Huber, J. L., Hamburg.  
 Kummer, O. L., & Co., Dresd., Waisenhausstr. 27.  
 Mayr, Joseph, München.  
 Mendel, Berthold, Berlin, Lützowstr. 84.  
 Milde, Albert, Wien, Untere Viaductgasse 37.  
 Müller, C. H. F., Hamburg.  
 Müller, C. H. H., Hamburg, Sonnenstr. 23.  
 Mundt, Nicolasia, Wien, Weyringergasse 13.  
 Schönemann, F., München, Utzschneiderstr. 7.  
 Schuch & Wiegell, Berlin, Franzstr. 9.  
 Schulz, Berlin, Georgenkirchstr. 48.  
 Schwerd, L. E., Karlsruhe.  
 Seeligmann, E., Karlsruhe.  
 Siemens, Glashütten, Dresden.  
 Siemens & Halscke, Berlin.  
 Tenner, Armin, Berlin, S.W., Zimmerstr. 34.  
 Trempler, Berlin, Mariannenstr. 35.  
 Uppenborn, F., jr., Hannover.  
 Wehr, Berlin, Ritterstr. 49.  
 Willmann, C., Hamburg, hohe Bleichen 5.  
 Wörtmann & Fröhlich, Düsseldorf.

**Electrische-Glocken.**

*E.—Bell Founders.*

*F.—Sonneries électriques.*

Becker & Frowein, Berlin, Gartenstr. 154.  
 Borchert & Sohn, Berlin, Alte Jacobstr. 110.  
 Collier, Berlin, Prinzen-Allee 66.  
 Grossheim, Berlin, Ackerstr. 108.  
 Heckmann, C., Berlin, Schlesischestr. 18.  
 Hugo, Alisch & Co., Berlin, Belle Alliancepl. 11.  
 Jauck, G. A., Leipzig.  
 Jauck, G. A., Leipzig. Schlagglocken für electrische Glocken.  
 Kortman, W., Berlin, Dresdenerstr. 79.  
 Krebs, C. G., Berlin, Michael Kirchplatz 6.  
 Retschke, Berlin, Heilige Geiststr. 12.  
 Schaeffer & Oehlmann, Berlin, Chausseest. 40.  
 Schoenbehrend, Berlin, Gr. Frankfurterstr. 122.  
 Skriwauk, Franz, Wien, Breitengasse 21.  
 Theiling, A., & Reichenbach, Magdeburg.  
 Weinert & Schmidt, Berlin, Stromstr. 42.  
 Ziegenspeck, Berlin, Kommandantenstr. 56.

**Electrisches Licht.**

*E.—Electric Light.*

*F.—Eclairage électrique.*

Actien-Gesellschaft für Fabrikation von Bronzesaaren & Zinkgasse, Berlin S. Wasserthorstrasse 9.  
 Braun & Heider, Wien, Schwarzenberplatz 6.  
 Buntzen, Jacob, Berlin, S.W.  
 Greiner & Friedrichs, Stützerbach, Thüringen.  
 Hauck, W. J., Wien, Kettenbrückengasse 20.  
 Müller, C. H. Floronz, Hamburg, Loninstr. 23.  
 Piette & Krizik, Pilsen, Böhmen.  
 Plössel, S., & Cie., Wien, Goldegasse 6.

**Electrisches Licht.—Fortsetzung.**

Prinz, Dr. August, & Co., Baumgarten, Hauptstrasse 35, nächst Wien.  
 Rainer, Dr. Jacques, Wien, Kärntnerstrasse 22.  
 Riatti, Vincenzo, Wien, Griseistrasse 5.  
 Rychnowski, Franz, Lemberg, Ossohnskigasse 10.  
 Spiecker & Co., Wien, Pelikangasse 16.  
 Wolff, Hess, & Co., Wien, Operngasse 14.

**Electrische Mess-Apparate.**

*E.—Electric Measuring Instruments.*

*F.—Appareils servant aux mesures électriques.*

Egger, B., Wien, Kleine Neugasse 23.  
 Mayer & Wolf, Wien, Van Swietengasse 12.

**Electrische Uhren.**

*E.—Electric Clocks.*

*F.—Horloges électriques.*

Honisch, Franz, Rossitz, Mähren.  
 Winbauer, Alvis, Baden, Theresiengasse 1.  
 Wolters, W., Wien, Kärntnerstrasse 30.

**Galvanische Kohlen.**

*E.—Electric Carbons.*

*F.—Charbons électriques.*

Bendl, Jos., Kaufbeuren, Bayern.  
 Gerrabock, Ludwig & Co., Eggenthal, Bayern.  
 Lessing, Dr. Albert, Nürnberg.  
 Zeller, J. & Co., Sonthofen.

**Galvanoplastiker.**

*E.—Electrotypers.*

*F.—Electrotypie.*

Fröden, Adolf Mayer, Wien, Eszterhazygasse 30.  
 Gursch & Klemm, Berlin.  
 Hasenkührl, M. Wien, Elisabethstrasse 1.  
 Kalmar, J., Wien, Liedengasse 21.  
 Koretz, Anton, Wien, Währing, Johannesgasse 415.  
 Krausz, Carl, Wien, Richterergasse, 7.  
 Kühnau, Rich., Leipzig.  
 Küstermann & Co., Berlin.  
 Otto, Albert, Leipzig-Roudnitz.  
 Plage's Nachfolger (Moriz Nackh), Wien, Mariahilferstr. 117.  
 Rochlitz, R., Hamburg.  
 Spitzauer, A. & Co., Graz (Steiermark), Elisabeththnergasse 22.  
 Sturm, O., Leipzig-Schönefeld.

**Gasmotoren.**

*E.—Gas Motors.*

*F.—Moteurs—Gaz.*

Arndt, J., Lübeck.  
 Berlin-Anhalt. Maschinenbau - Actien - Gesellschaft, Berlin-Moabit.  
 Buss, Sombart & Co., Magdeburg.  
 Cölner Maschinenfabrik, Carl Beissel & Co., Ehrenfeld.

**Gasmotoren.—Fortsetzung.**

Filler, Friedr., Eimsbüttel-Hamburg.  
Gasmotorenfabrik, Deutz bei Cöln.  
Glossier, Gebr., Frankenthal i/Pfalz.  
Hallmann, Jos., Wien.  
Jülg & Co., Basel.  
Körting, Gebr., Hannover.  
Langen & Wolff, Wien.  
Lossen, Gebr. J. & C., Darmstadt.  
Mark, X., Basel.  
Markuth, T., Hamburg.  
Mesthaller & Co., Nürnberg.  
Möller & Blum, Berlin.  
Reissel, C., & Co., Ehrenfeld b/Cöln.  
Steinle & Hartung, Quedlinburg.

**Glasfabriken.**

*E.—Glass Works.*

*F.—Verreries et vases.*

Actiengesellsch. f. Glasfabrik., Spiegel, Fürth, Baiern.  
Bakalowitz, Fr., & Söhne, Wien, Hoher Markt 5.  
Campe & Co., Berlin, Seydelstr. 24.  
Czeika, J., & Pokorny, Wien, Taborstrasse 20.  
Danneleit & Klein, Berlin, Lindenstr. 25.  
Glasfabrik - Actiengesellschaft Goldbach, Floss, Baiern.  
Hanauer, F., für Photographen, Annathal bei Schönsee, Baiern.  
Heubach & Co., Augen, Lauscha i/Th.  
Kiecke, E., Tafelglas, Dittelsdorf, Kr. Sprottau, Schlesien.  
Kuhnert, G., & Co., Perlen etc., Ernstthal bei Sonneberg.  
Lazarowitz, F., Boxhagen bei Berlin.  
Lorbach, V., Glasbläserei, Hildburghausen.  
Müller, H. C. F., Hamburg.  
Oettinger, Berlin, Ritterstr. 90.  
Primavesi, J. C. F., & Sohn, Glasbläserei, Magdeb.  
Poncet'sche, von, Glashüttenwerke, Berlin, Köp-nickerstr. 54.  
Reich, St., & Co., Wien, Czerningasse, 3.  
Reich, D. J., Berlin, SW., Hallisches Ufer 10.  
Rhein. Glashütten - Actiengesellschaft, Cristal, Flacons, Ehrenfeld b/Cöln.  
Rohrbeck, D. Herrman, Berlin, Königgrätzerstr. 112.  
Schachtel, Charlottenbrunn i/Schl.  
Schlag & Behrend, Berlin, Alexanderstr. 70.  
Schreiber & Neffen, Wien, Liechtensteinstrasse 22 & 24.  
Stoelzel, C., & Söhne, Wien, Freihaus-Kauptstrasse 2.  
Warmbrunn, Quilitz & Co., Berlin, Rosenthalerstr. 40.  
Wilhelm, M. J., Glasbläserei, Oberweisbach i/Th.  
Winzer & Uhlig, Berlin, Stallschreiberstr. 59.  
Vultojus, Arno v., Hohl- & Medizin-Façongl., Carlsfeld i/S.

**Glühlichtlampen.**

*E.—Incandescent Lamp Makers.*

*F.—Lampes électriques à Incandescence.*

Greiner & Friedrichs, Stützerbach.  
Müller, C. H. F., Hamburg.  
Siemens, Fr., Dresden.

**Haustelegraphen-Fabriken.**

*E.—Electric Bell Fitters and Contractors.*

*F.—Sonneries électriques (Poursuiv. de).*

Binger & Koch, Berlin, Stallschreiberstr. 66.  
Bolle, O., Berlin, W., Behrenstr. 27.  
Bracke, Carl, Berlin, SW., Puttkammerstr. 1.  
BRANDT, J. A., jr., Cassel.  
Grubert & Sohn, Berlin, Krausenstr. 18.  
Krause & Moodebeck, Berlin, Stralauerplatz.  
Mix & Genest, Berlin, S., Prinzessinnenstr. 1.  
Müller, Louis, Bingen a/Rh.  
Nöge, Herrmann, Chemnitz.  
Ropaschinsky, Berlin, Neuenburgerstr. 9.  
Röschke & Buschkiel, Zittau i/Sachsen.  
Wenig, Berlin, Dresdenerstr. 90.  
Wagner, C. Theod. Wiesbaden.  
Wehr, G., Berlin, Ritterstr. 49.  
Töpffer & Schädel, Berlin, Köthenerstr. 4.

**Isolatoren Fabrikanten.**

*E.—Insulator Manufacturers.*

*F.—Isolateurs.*

Fischer, F., Wien, Kärntnerstrasse 61.  
Prager Porzellan & Thonwaaren Fabrik, Smic bei Prag.  
Villeroy & Boch, Schramberg, Württemberg

**Laboratorien.**

*E.—Laboratories.*

*F.—Laboratoires.*

Braun, Dr. B. T., Rosswein, Sachsen.  
Brunnengrüber, Dr. G., Rostock i. M.  
Buchner, Dr. Carl, München.  
Ebermair, Dr. E., Nürnberg.  
Horb, W. A., Pulsnitz, Sachsen.  
Kurz, Dr. A., Wernigerode.  
Laborat. f. analytische Untersuch., Fabr. ch Prod., Stuttgart.  
Wittstein, Dr. A., München.

**Maschinen-Rieme.**

*E.—Driving Band Manufacturers.*

*F.—Courroies de transmission.*

Bandekow, Gebr., Berlin, Lindenstr. 2.  
Bantlin, C. D., Reutlingen.  
Beringer, Carl, Stuttgart.  
Dolälzal, Franz, Wien, Währingerstr. 55.  
Driessen, P., Eupen.  
Einrich, R. L., Kusel.  
Evertz & Grohe, Cöln.  
Fischl, Julius, Wien, Lichtenauergasse 1.  
Glückmann, J., Prag, Wenzelsplatz, 834.  
Goern & Co., Berlin, Oranienstr. 81, 82.  
Grapentien & Meyer, Berlin, Louise-Ufer 1.  
Grauenhorst & Co., Berlin, Adalbertstr. 59.  
Hagen, E., & Co., Wien, Nieblungengasse 1.  
Hanisch, W., jun., Berlin, Holzmarktstr. 8.  
Hartmann, M., Augsburg.  
Heusch, Hugo, Aachen.  
Heyer, A., Braunschweig.  
Hurling, Friderich, Wien, Prossgasse 23.



**Maschinen-Rieme.—Fortsetzung.**

Ibing, K., Broich.  
 Kaesse, F. W., Berlin, Elisabeth Ufer 43.  
 Kühne, F. W., Berlin, Brandenburgstr. 6.  
 Lange & Pöhler, Arnstadt, Thür.  
 Lenhart, J., Wien, Mariahilferstr. 45.  
 Moll, Riehl b/Cöln.  
 Paulsen, Adolph, München, Müllerstr. 8.  
 Persicaner & Co., Wien, Barhring 10.  
 Petzl, Jean B., Wien, Adlergasse 1.  
 Pinsdorf, Oswald, Leipzig.  
 Polenz & Richter, Berlin, Kürassierstr. 4.  
 Rack A., & Co., Wien, Praterstr. 47.  
 Rammer, Fr. Jos., Chorn bei Pulsnitz.  
 Sauer, G., Marburg.  
 Schanzenbach, Gebr., Möckmühl, Württ.  
 Schlaier, J. J., Reutlingen.  
 Schmidt & Zorn, Berlin, Kommandantenstr. 31a.  
 Schwartz, Ad., & Co., Berlin, Kochstr. 73.  
 Schmidt, C., Sohn, Breslau.  
 Selter & Eloesser, Berlin, Louisen-Ufer 7.  
 Thide & Clauss, Berlin, Neue Grünstr. 38.  
 Torrige, E., Breslau.  
 Wagner, A., Neu Sellershausen b/Leipz.  
 Wagner, Gebr., Suhl.  
 Zbörel, Wien, Waaggasse 10.

**Maschinen- & Modell Zeichner.**

*E.—Designers of Models and Machinery.*  
*F.—Dessinateurs.*

Bemme, C., Berlin, Blumenstr. 53.  
 Broecker, Berlin, Belforterstr. 29.  
 Lapieng, Berlin, Behrenstr. 55.  
 Röhl, Berlin, Lichterfelderstr. 8.  
 Zierow, Berlin, Prinzenstr. 23.

**Mechaniker.**

*E.—Engineers—Mechanical.*  
*F.—Mécaniciens.*

Albert, F. W., Frankfurt a/M., Neue Mainzerstr. 34.  
 Böhm & Wiedemann, München, Kaufingenstr. 20.  
 Bohnenstengel, Emil, Berlin, SW., Johannisstr. 16.  
 Bredemeyer, Frankfurt a/Oder.  
 Buchmeyer, F. W., Bremen.  
 Deckert, Julius, Glatz.  
 Dörfel, P., Berlin, NW., U. d. Linden 46.  
 Duncker, W., Breslau.  
 Ehrlich, Fr., Schweidnitz i/Schl.  
 Förster, H., Posen.  
 Gröper, Albin, Düsseldorf.  
 Koch, Rudolph, Göttingen.  
 Leuner, Dresden.  
 Matthäus, Paul, Görlitz.  
 Neher, Joh., München, Barerstr. 34.  
 Perge, Theodor Georg, Würzburg.  
 Pfankuch, Carl, Cöln a/Rh.  
 Rohde, P., Cöln a/Rh.  
 Schröder, Ch., Frankfurt a/M.  
 Schwerd, L. E., Karlsruhe i/B.  
 Stürm, Franz Xaver, Regensburg.  
 Wendt, Ernst Herrmann, Dresden.

**Motoren.**

*E.—Motors.*  
*F.—Moteurs.*

Boehm, Wien, Breitogasse 2.  
 Müller, Klask & Co., Wien, Neulerchenfeld, Gaulbachergasse 40.  
 Körting, B. & E., Wein, Carsgasse 22.  
 Schranz, C., & Rödiger, G., Wien, Dampfasse 15.  
 Bernhardt, G., & Sohne, Wien, Schönbrunnerstr. 23.

**Nickel.**

*E.—Nickel.*  
*F.—Nickel.*

Basse & Selve, Altena.  
 Fleitmann & Witte, Iserlohn.  
 Fleitmann & Witte, Schwerte b/Dortmund.  
 Victoriahütte, Actiengesellsch., Naumburg a/Bob.

**Optische und meteorolog. Instrumente.**

*E.—Optical and Meteorological Instrument Makers.*  
*F.—Instruments optiques et meteorologiques.*

Clement, Berlin, Holzgartenstr. 9.  
 Fuess, R., Berlin, Alte Jacobstr. 108.  
 Greiner, J. G., sen., & Sohn, Berlin, Kurstr. 15.  
 Obenaus, J. G., sen., Berlin, Friedrichsgracht 49.  
 Obenaus, O., jun., Berlin, Fischerbrücke 2.  
 Plath, Berlin, Kanonierstr. 43.  
 Schultze, G. A., Berlin, Schmidstr. 42.  
 Strauss, Gebr., Berlin, U. d. Linden 44.  
 Zorn, Berlin, Schenöbergerstr. 17.

**Patent-Bureaux.**

*E.—Patent Offices and Agents.*  
*F.—Brevets d'invention.*

Brandt, J., Berlin, Königgrätzerstr. 131.  
 Brandt & von Nawrocki, Berlin, Leipzigerstr. 124.  
 Brydges & Co., Berlin, Königgrätzerstr. 73.  
 Doepner, Berlin, Lützowstr. 13.  
 Kessler, C., & Co., Berlin, Königgrätzerstr.  
 Knoblauch & Co., Berlin, Charlottenstr. 17.  
 Lenz & Schmidt, Berlin, Grenadierstr. 8.  
 MENDEL, BERTHOLD, BERLIN, LÜTZOW-STR. 84.

**Pergament.**

*E.—Parchment.*  
*F.—Parchemin.*

Bechtolsheim, M. v., München.  
 Custodis & Co., Düsseldorf.  
 Dehner, C., Würzburg.  
 Dickmann, Hugo, Dortmund.  
 Klauer, H., Düsseldorf.  
 Rommel, G., Hof.  
 Körner, Joh., Nürnberg.  
 Podewils, v., & Heinze, München.  
 Rube, H. & Co., Dortmund.  
 Steinmann, F., Dresden.  
 Wildpret, C., Augsburg.

**Porzellan-, Steingut- und Thonwaaren-fabrikation.**

*E.—Porcelain, Stoneware, and Earthenware Manufacturers.*

*F.—Porcelaine, poterie de grès, etc.*

Bockhacker, H., Berlin.  
Bordello, Gebr., Grünstadt, Baiern.  
Constantinhütte bei Freiberg.  
Degenring, Th., Katzhütte.  
Dinse, A., Berlin.  
Driesel, Kriesel & Co., Passau.  
Fischer, Chr., Zwickau.  
Gräfner, G., & Co., Pulsnitz.  
Hoffmann & Zinkeisen, Zwickau.  
Hölterhoff & Exner, Cöln.  
Hutschenreuther, L., Selb b/Hof, Baiern.  
Jörning & Sauter, Buckau-Magdeburg.  
Jordan, J., Sohn, Darmstadt.  
Kgl. bair. Porzellan-Manufactur Nymphenburg, Nymphenburg b/München.  
Kgl. Porzellan-Manufactur, Meissen.  
Laeis, Ed., & Co., Trier.  
Langenstein & Schemann, Ernsthütte.  
Leibe & Hoffmann, Gera.  
Loser, A., Bendorf.  
Mönkemöller, Bonn a. Rh.  
Nenzel, Georg, Giessen.  
Netzech Gebr., Selb i. Baiern.  
Pallenberg, Jos., Mannheim.  
Schlickseisen, C., Berlin.  
Utzschneider & Co., Saargemünd.  
Windisch & Kunze, Meissen.

**Physicalische Apparate.**

*E.—Physical Science Apparatus Makers.*

*F.—Appareils scientifiques.*

Gallinger, Johann, Ostermünchen.  
Hartmann, Eugen, Würzburg.  
Kolbe, Herrmann, Halle a/S.  
Löhner, Franz Xaver, München.  
Stollreuther & Sohn, München, Marsstr. 32.

**Regulator-Fabrikanten.**

*E.—Governor Makers.*

*F.—Régulateurs (Fab. de).*

Buss, Somart & Co., Magdeburg.

**Röhren—Messing und Kupfer.**

*E.—Tubes—Brass and Copper.*

*F.—Tuyaux—Laiton et cuivre.*

BOOTH & CO., Sheepcote-street, Birmingham.  
Telephon Nr. 311.

**Röhren—Thon.**

*E.—Earthenware Pipe Manufacturers.*

*F.—Tuyaux en grès.*

Barteldt, Berlin, Hornstr. 96.  
Berger & Kulp, Berlin, Schönebergerstr. 22.  
Cochius, Berlin, Ritterstr. 13.  
Deutsche Thonröhren-Fabrik, Berlin, Mühstr. 24.  
Deutsche Thonröhren und Chamotte-Fabrik A. Brandt, Münsterberg i/Schlesien.  
Deutsche Thonröhren-Chamotte-Fabrik, Münsterberg.  
Deutsche-Portland-Cement-Fabrik, Berlin, Friedrichstr. 185.  
Glöncke, Berlin, Elisabethufer 44.  
Goodson, Berlin, Potsdamerstr. 22.  
Haag, Joh., Berlin, Halleschestr. 28.  
Kammerich & Co., Berlin, Fennstr. 27.  
Lederer & Nessényi, Wien, Operngasse 14.  
Meyer & Co., Berlin, Trebbinerstr.  
Rosenthal, H., Berlin, Chausseest. 113.  
Toeppe & Co., Berlin, Schiffbauerdamm, 16.

**Röhren—Zinn und Blei.**

*E.—Pipes—Tin and Lead.*

*F.—Tuyaux—Étain et Plomb.*

Bergmann & Franz, Berlin, Köpnickstr. 50.  
Budde & Grehde, Berlin, Gitschinerstr. 32.  
Jung & Lindig, Freiberg i/Sachsen.  
Krafft, Berlin, Köpnickstr. 116.  
Teichmann & Sauer, Berlin, Holzmarktstr. 4.  
Wipprecht, vorm. Roeder & Co., Berlin, Prinzenstr. 35.

**Salpeterfabrikation u. Salzmühlen.**

*E.—Saltpetre and Potash Manufacturers.*

*F.—Salpêtre (Fab. de).*

Sauerbrey, G., Stassfurt.

**Schmelzer und Probirer.**

*E.—Assayers and Smelters.*

*F.—Essayeurs et Fondeurs.*

Barella Nachf., Berlin, Köpnickstr. 139.  
Berliner Medaillen-Münze, Berlin, Neue Friedrichstr. 56.  
Deppe, Berlin, Stallschreiberstr. 12.  
Flügge & Rietz, Berlin, Brandenburgstr. 61.  
Hirschfeld & Meyerheim, Berlin, Adalbertstr. 40.  
Lipke, Gebr., Berlin, Prinzenstr. 84.  
Meyer, N. & Co., Berlin, Sebastianstr. 20.  
Sy & Wagener, Berlin, Kronenstr. 28.  
Voeltzkow jr., Berlin, Sebastianstr. 76.

**Sonstige Artikel für Elektriker.**

*E.—Electrical Sundries.*

*F.—Appareils électriques.*

Buchholz, Rob., Remscheid.  
Heine, Gebr., Offenbach a/M.  
Prinz & Blacke, Altena.  
Wolff, Carl, Nürnberg, Frauenthormauer 42.

**Schrauben und Feilen.**

*Screws and Files—Manufacturers of.*  
*F.—Vis et limes.*  
 für Feilen Fabric., Berlin, Chaussee-  
 inrich, Berlin, C., Friedrichstr. 131.  
 Madler, Berlin, Eisenbahnstr. 5.  
 & Hundt, Berlin, Waldemarstr. 27.  
 ilenfabrik, Berlin, Schwedterstr. 16.  
 chmiede-Gesellschaft, Berlin Reinicken-  
 str. 64.  
 arlottenburg bei Berlin.  
 Zorn, Berlin, Weinmeisterstr. 14.  
 ich & Co., Berlin, Fennstr. 27.  
 Dressler, Berlin, Hollmanstr. 35.  
 Roelke, Berlin, Prinzenstr. 33.  
 J. G. & Sühno, St. Georgen, Schwarzwald.

**nale, Weichen und Schienen.**

*Manufacturers of Railway Signals & Switches.*  
*-Signaux et aiguilles de chemins de fer.*  
 V., München.  
 W., Pieschen bei Dresden.  
 Rosenkranz & Dröge, Hannover.  
 J., & Co., Kükkelhausen.  
 Dr. G., Reichenhall.  
 he Stahlwerke, Ruhrort.  
 Eisenwerke, Radeburg i/Sachsen.  
 C. G., Chemnitz.  
 & Henning, Bruchsal, Baden.  
 , C. E. & C., Karlsruhe.  
 Jos., Mannheim.  
 nüller, H., Speyer.

**Steingut.**

*E.—Stoneware Manufacturers.*  
*F.—Tuyaux en poterie.*  
 & Co., Saarbrücken.  
 oh., Kehlheim.  
 luard, Amberg.  
 J., Frechen b/Cöln.

**Talg.**

*E.—Talc.*  
*F.—Talc.*  
 nn, II., Barmen.  
 Gebr., Breslau.  
 r, S., Ehrenfeld.  
 Vogel, Hamm, Westph.  
 & Fuchs, Kempten.  
 C. G., Leipzig, Brühl 58.  
 , Gebr., München.  
 J., Werther.

**Technische Zeitschriften.**

*E.—Scientific Publications.*  
*F.—Publications scientifiques.*  
 nen Journal für Uhrmacherkunst, Leipzig.  
 t der Deutschen Reichs-, Post- & Telegra-  
 Verwaltung, Reichspostamt, Berlin.  
 der Hydrographie, Kaiserl. Admiralität,

**Technische Zeitschriften.—Fortsetzung.**

*Annalen der Physik und Chemie*, Leipzig.  
*Annalen für Gewerbe & Bauwesen*, Berlin.  
*Archiv für die Artillerie- und Ingenieur-Officiere*  
*des deutschen Reichsheeres*, Berlin.  
*Archiv für Post & Telegraphie*, Reichspostamt,  
 Berlin.  
*Baugewerkzeitung*, Berlin.  
*Berichte der deutschen chemischen Gesellschaft*,  
 Berlin.  
*Centralblatt der Bauverwaltung*, Berlin.  
*Central-Zeitung für Optik und Mechanik*, Leipzig.  
*Chemiker-Zeitung*, Cöthen.  
*Chemisch-technisches Repertorium*, Berlin.  
*Der Metallarbeiter*, Berlin.  
*Deutsche Allgemeine Politechnische Zeitung*, Berlin.  
*Deutsche Bauzeitung*, Berlin.  
*Deutsche Industriezeitung*, Chemnitz i/Sachsen.  
*Deutsches Patent-Blatt*, Kaiserl. Patent-Amt,  
 Berlin.  
*Die chemische Industrie*, Berlin.  
*Dingler's Politechnisches Journal*, Stuttgart.  
*Eisenbahn-Verordnungsblatt*, Königl. Ministerium  
 der öffentl. Arbeiten, Berlin.  
*Eisen-Zeitung*, Berlin.  
*Electro-Technische Zeitschrift*, Berlin.  
*Fortschritte der Physik*, Berlin.  
*Gerber-Zeitung*, Berlin.  
*Heusingers's Organ für Fortschritte des Eisenbahn-  
 wesens*, Wiesbaden.  
*Jahrbuch der Erfindungen und Fortschritte auf  
 physikalischem Gebiete*, Leipzig.  
*Journal für Gasbeleuchtung und Wasserversorgung*,  
 München und Leipzig.  
*Literarischer Anzeiger für Berg-, Hütten-, Maschi-  
 nenwesen und für verwandte technische Zweige*,  
 Berlin.  
*Repertorium für Experimental-Physik und für phy-  
 sikalische Technik*, München.  
*Verhandlungen der Politechnischen Gesellschaft*,  
 Berlin.  
*Wochenblatt des Vereins deutscher Ingenieure*,  
 Berlin.  
*Wochenblatt für Architecten & Ingenieure*, Berlin.  
*Zeitschrift für angewandte Electricitätslehre*,  
 München.  
*Zeitschrift für Bauwesen*, Berlin.  
*Zeitschrift für Berg-, Hütten- und Salinenwesen im  
 preuss. Staate*, Berlin.  
*Zeitschrift für Instrumenten-Kunde*, Berlin.  
*Zeitschrift für Mathematik und Physik*, Leipzig.  
*Zeitung des Vereins deutscher Eisenbahn-Verwal-  
 tungen*, Berlin.

**Telegraphenbau-Anstalten.**

*E.—Contractors for Telegraph Installations.*  
*F.—Télégraphes (Entrepreneurs de).*  
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 Pauly, G., & Co., Mengen i/Wbg.  
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 Rubach, Berlin, Lichtenbergerstr. 13.  
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 SPEISER, CARL, NÜRNBERG.  
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 Zeluich, Franz, Wien, Zieglergasse 22.

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 Dross, Ferdinand Berlin, Louisen, Ufer 27.  
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 Schwerdt, L. E., Karlsruhe.  
 Wehr, G., Berlin, alte Jacobsstr. 35.  
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 Zimmer, Josef, Furtwangen, Baden.

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American Telephone Co., Limited, Rotterdam.  
 Baur, Gust., Stuttgart.  
 Iserhardt, Gustav, Rheydt i/W.  
 Kummer, O. L., & Co., Dresden, Waisenhausstr. 27.  
 Mack, Joh. W., Frankfurt a/M.  
 Maier, Albert, München.  
 Nieter, H., Altona.

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Tchikoleff, Wladimir Nikolajewitch, à l'administration centrale de l'artillerie russe, St. Petersburg.

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Richter, O. B., Admiralit.-square, 1/4, St. Petersburg.

Salles, W. & Wernier, A., Kusnetzki-bridge, house Gagarino, Moscow.

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Seeger, F., Kusnetzki-bridge, house Torlotski, Moscow.

Trindin, E. & Sons, Loubianka, house Trindin, Moscow.

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Boeri, Miasnitzka, house Museum, Moscow.

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Daniloff, M. A., Sadowaia, house Daruloff, Moscow.

Dettmann, Heinr, Riga.

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Geritsch, T., of the Nowaroussinsky Univ Odessa.

Krawski, E. F., Miersnitzkaja, house Central Telegraph, Moscow.

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Società anonima Generale Italiana di Telefoni ell applicazione electriche, Naples, via Medina, 24.

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Déchéwoff, Michel Michailowitch, Fontanka, 132, St Petersburg.

Michailowitch, Léonide, Jwanoff, Ingénieur militaire à l'administration central du Genie, St. Petersburg.

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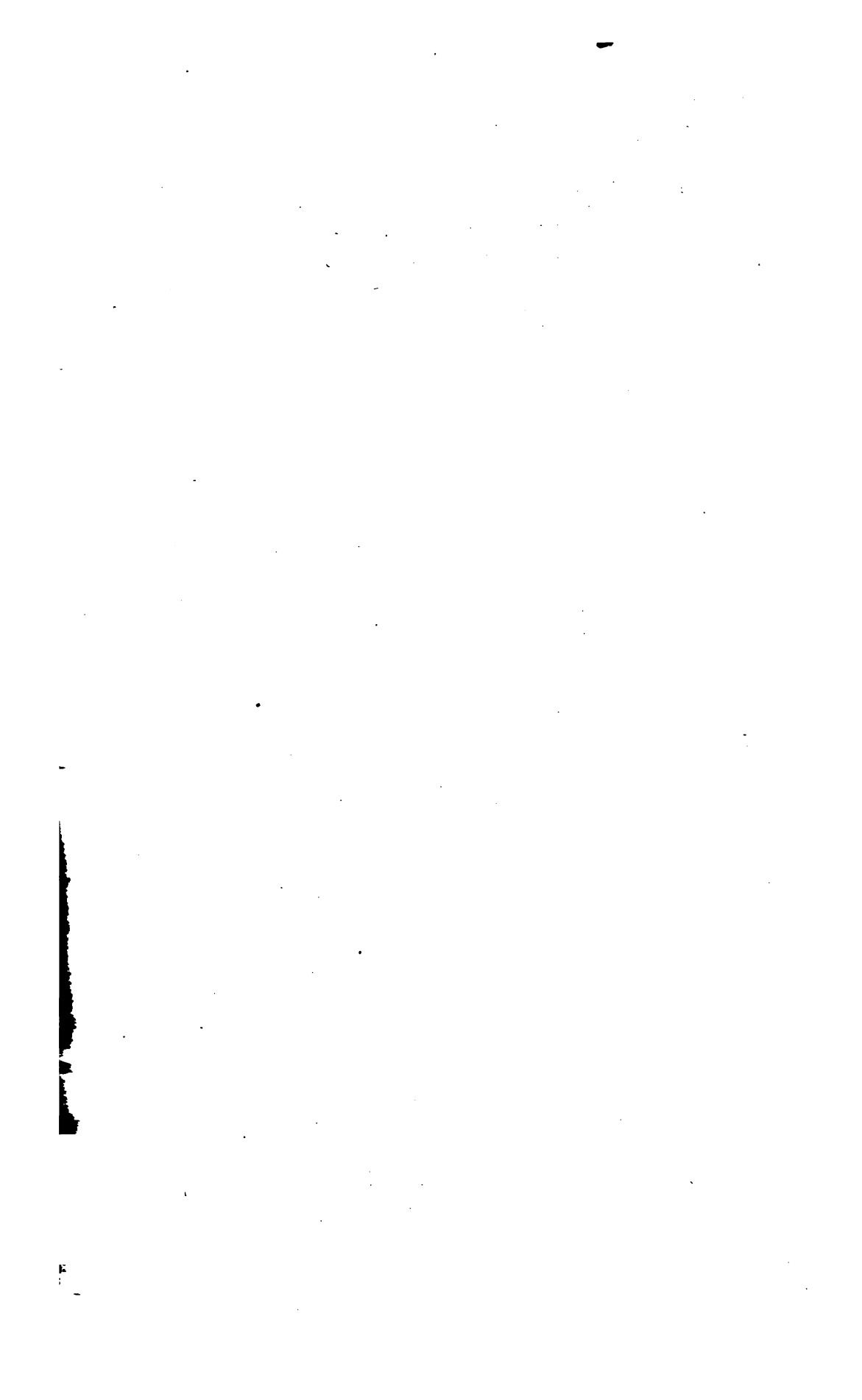
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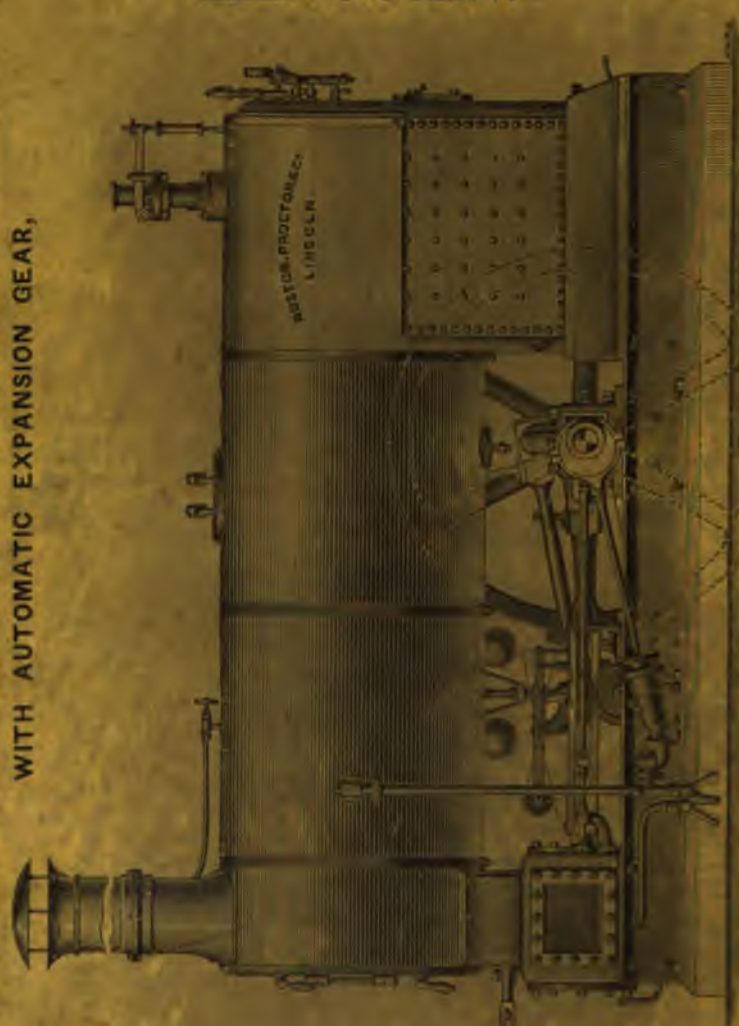
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